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TWELVE BOOKS FOR THE PEOPLE,

REPORTS, PROGRAMMES, &c.

GIVEN TO THE

MEMBERS AND TICKET HOLDERS

OF

THE EDUCATIONAL BUREAU.

FIRST SERIES.

1881—82.

EDITED BY

CHARLES E. BOLTON.

PUBLISHED BY

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PREFACE.

THE "BOOKS FOR THE PEOPLE" were edited and published for free distribution at the People's Tabernacle, on twelve Saturday nights (beginning January 14th and ending April 1st), to nearly four thousand members and ticket holders, without thought of ever binding the single pamphlets into a book; hence the defect in this volume of consecutive paging, which renders even an attempt at a table of contents almost useless.

The dollar charged for three grand concerts, nine lectures, ten musical preludes, and twelve books,—of course necessitated economy in the style of our little books. The second series will be much improved.

C. E. B.

CLEVELAND, O., April, 1882.

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No. 1.

A BRIEF HISTORY

OF

MUSIC.

"They will discourse most eloquent music."
—*Shakspeare.*

ITS GREAT INFLUENCE.

PUBLISHED BY

THE CLEVELAND EDUCATIONAL BUREAU.

CLEVELAND, OHIO.

LEADER PRINT.

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"Desire ye to know whether a land is well governed, and its people have good morals? Hear its music."—*Confucius.*

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CLEVELAND, OHIO.

1882.

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GRAND CONCERT

UNDER THE DIRECTION OF

MR. ALFRED ARTHUR,

SATURDAY EVENING, JANUARY 14, at 8:15 o'clock.

PROGRAMME.

1. PART SONG—O Hush Thee, my Baby.....SULLIVAN
   CHORUS.
2. SOPRANO SOLO—Angel at the Window.....TOURS
   MRS. HENRY PERKINS.
3. PIANO SOLO—Concert Waltz.....BENDEL
   MR. J. H. ROGERS.
4. TENOR SOLO—The Bloom is on the Rye.....BISHOP
   MR. WM. A. FITCH.
5. BALLAD DIALOGUE—Who killed Cock Robin?.....DE PEARSALL
   CHORUS.
6. BALLAD—Agnes McDonald.....ROECKEL
   MISS ELLA MANSFIELD.
7. QUARTETTE—Presage of Spring, Op. 22.....HOLLANDER
   MISSES TINTA FULLER AND ALIDA THOMAS,
   MISS HELEN BRIGGS AND MRS. C. W. LOCKARD.
8. VIOLIN SOLO—Second Rapsodie Americaine, Op. 44.....M. HAUSER
   MR. J. H. AMME.
9. WARRIOR BOLD.....ADAMS
   MR. HOWARD SMITH.
10. PART SONG—Were I the Nightingale.....W. HAY
    CHORUS.
11. PIANO SOLO—Sicilienne Vespers.....RAFF
    MR. W. B. COLSON.
12. MENDELSSOHN QUARTETTE—The Artillerists' Oath.....ADAMS
    E. P. ALEXINE, CHAS. A. COOK, } *Tenors.* E. R. KANT, E. D. EMERSON, } *Bass.*
13. SOPRANO SOLO—To Sevilla.....GESSAUER
    MRS. HENRY PERKINS.
15. SONG OF THE TRITON.....MOLLOY
    CHORUS.

MISS M. S. WRIGHT, *Pianist.* MR. ALFRED ARTHUR, *Conductor.*

The Steinway & Sons' Concert Grand Piano used on this occasion is kindly furnished *by S. Brainard Sons.*

BRIEF HISTORY OF MUSIC.

MUSIC IN GENERAL.

What the wonderful electric light is to the eye, music is to the soul of man. It is an element in nature no less than light, air, electricity and the warmth of the sun. It is manifest in the thunder, in the sighing of the winds in the forests, the surge of the ocean dashing upon its rocky shore, the cry of the beasts of the field and the birds of the air; and every sound of the human voice, whether of pleasure or pain, that is wafted upon the waves of the air, and touching the ear, is thus communicated to the human soul, inspiring or depress- ing the spirit of man. Its human manifestation commenced with the moaning of the first infant in the cradle, supplemented by the twitter of the first bird perched upon the tree in the garden of the primeval world, the first lamb that bleated upon the slopes of the mountains in Central Asia, and the first fierce battle-cry of rude nomadic tribes contending for ground on which to pitch their tents or pasturage for their flocks.

ANTIQUITY OF MUSIC.

Music, as a practiced art, is as old as humanity itself. It is pre-historic, and its beginnings are lost in the myths and mysteries of the origin and history of the human race, and will never be known until the beginnings of races, tribes and nations shall have been discovered and made known by the laborious and searching ethnologist. No wild tribe has yet been found on the face of the globe that does not possess something of music in his nature, and practices it either in voice or by instrument, however rude, discordant, or even offensive it may be to cultivated ears.

MUSIC IN THE MORNING LAND,

The legends of a people often contain a germ of true history. The most ancient legend touching the history of music is more than five thousand years old, and has come down to us from China. It relates

that at that early period the Chinese musical scale consisted of five primal tones only. These were conceived to be symbolical of the five elements of nature—earth, metal, wood, fire and water. Early respect and reverence for imperial rule led the court musicians to dignify their profession by a national symbolization representative of the Emperor, the minister, the people, affairs of State, the body politic. All this, of course, was fancy and complimentary, but it had the happy result of securing government influence in advancing the art. In process of time, as the art developed, new tones were conceived and added by different authors without reference to former standard musical rules, whereby confusion arose in musical matters at the Imperial Court, and the Emperor took the subject in hand with a determination to establish music on a basis of sound principles and fixed laws. To that end, the Emperor Hoang-Ti ordered Ling-Lun, the greatest musician of his time, to bring order out of confusion and establish music on a new and permanent foundation. So Ling-Lun, like some modern philosophers and original scientific investigators, resorted to original sources to ascertain the number of musical notes and the key-note of nature. He left the capital and the abodes of men, and sought the highest mountain in Central Asia, where the great Hoang-Ho takes its rise. While ascending a lofty peak, he suddenly felt his feet refusing their support. He sat down and soon fell into a deep reverie. There appeared to him Fung-Hoang, the wonderful double-bird, which appears to man only on rare occasions, and for the especial purpose ef benefitting mankind in general. The male Fung sang six tones, and the female Hoang six others, and the deepest tone produced by Fung was Kung, the great tone—earth and emperor in the symbolized scale. Now the waters of the Hoang-ho, rushing by, likewise intoned the Kung, and Ling-Lun's own voice, when speaking, was in unison with it. So Ling-Lun recognized it as the root-tone, whence all others had sprung. He then returned to the capital, and elaborated his new system. To the great fundamental tone, the generator of all others, Kung, was added other tones called helpers and supporters, for by their aid the circle of the fifths and fourths was effected. The double-bird had sung twelve notes. These formed the twelve semitones of the octave. Those intoned by Fung were considered perfect, while the others were imperfect. This was in accordance with Chinese philosophy, which divided things into perfect and imperfect, and held that each thing perfect had a counterpart in something imperfect; like the relation which man stood to woman, heaven to earth, the sun to the moon. The twelve semitones were also symbolical of the twelve moons of the year. Taking their premises, that each mode was a manifestation of some principle, as

materialized in the elements of the State, so also as materialized in an element in Nature, the Chinese had a complete and logical theory explaining the power of music over the emotions. They believed that each tone and each mode impressed itself, according to its character, directly on the mind, without the intervention of thought; that music acted in a primary manner, acted as much upon the person ignorant of its deep signification as upon the philosopher. The ancient Chinese, moreover, held music in high estimation in consequence of their theory. Whatever may have been the state of musical knowledge and art in China in the earlier times, as compared with that of Western nations to-day, or in the intervening ages, its influence upon Emperor and people had been such that it is recorded that one of the sayings of Confucius, two thousand years later, was: "Desire ye to know whether a land is well governed, and its people have good morals? Hear its music." Another philosopher of the empire asserts, that whoever understands music well, is capable of governing. Fo-Hi himself was an inventor of an instrument, the *Kin*. A number of Emperors were skilled musicians and composers; several are portrayed as performing on the *Kin*.

MUSIC IN THE CLOUDED LAND.

The less poetic and more practical, if not more scientific Egyptians symbolized music with the whole cosmos, the universe, or planetary system as understood by them in the earlier ages of that country. They compared the seven tones of the diatonic scale to the seven planets. This was at least a sublime idea. It pervaded all that subsequent time which to us is known as historical antiquity of Egypt, also the middle ages, and there are even traces of it in recent times—the idea of the harmony of the spheres. Music was no longer, as in the remoter East, merely a manifestation of terrestrial forces, symbolical of terrestrial governments; it came to be considered a manifestation of the celestial, of spirit which regulates the universe. Harmony was no longer restricted to the earth; it came to be the ruling principle of nature. The gods were the means through which the knowledge of music was imparted to man. Osiris invented the flute; Isis, the sacred songs. The seven tones of the Eyptian scale were deemed manifestations of the principle which produced the seven planets, endowed by the Creator with motion, and which were then supposed to revolve around the stationary earth—Mercury, Venus, Mars, Jupiter, Saturn, the Sun and Moon. Herschel and Neptune were then unknown. Being something of astronomical mathematicians, they conceived the ratio between the lowest tone and the highest to be the same as between Saturn, the most distant known planet, and the

moon, the nearest. These ideas are all set forth and illustrated in ancient Egyptian books, two of which, devoted to music alone, have come down to us. They ascribed pathological virtues to music, designating it as physic for the soul.

It is possible that the old Egyptians had even a more sublime conception of music in its relation to the celestial orbs than we are wont to concede to them. as involved in the expression, "harmony of the spheres," Egypt and Chaldea possessed the primeval knowledge of astronomy—the order and movement not only of the planets of the solar system, but also of the myriad stars and the great constellations of the zodiac. Motioh was their most significant manifestation, Motion is the generator of tone-music, whether of the voice or instrument, or other terrestrial phenomena. Music thus being the resultant of terrestrial motion, how natural to the ancient philospher, hardly less than poet and musician, to conceive that the celestial spheres, in their wonderful orbital velocity, should produce upon the ear of the Creator, and possibly upon the spirits of the ancient gods and the souls of the dead Egyptian, harmony not unlike that of earth, but more glorious and grand, even as the heavens are above the earth, May not Moses, or Pythagoras the Greek, both of whom were priests of the temples, learned in all the knowledge of the Egyptians, of which music was not the least even in the days of the first, have conceived that the music of earth was but the echoes of the harp of the universe, whose strings were planetary orbits, set in vibratory motion by the breath of the Perfect Master, Deity himself, in the morning of creation? This, of course, is a mental conception which the limited capacity of man can never demonstrate as a truth. So smoothly run the planets in their mighty courses round the sun, that man cannot physically appreciate the slightest motion; and nothing but his knowledge of mathematical astronomy demonstrates the fact that the earth on which he lives shoots through space with a volocity of one thousand two hundred miles a minute; Venus a little faster, and Mercury one thousand eight hundred miles a minute; yea, that during this hour's entertainment, the earth has been hurled through space seventy-two thousand miles. Such motion may evolve music, grand and harmonious to an Infinite Mind in the realms of outer space. Thus, the "Music of the Spheres," "Celestial harmony," while treated as the expression of an ancient poetic fancy, may nevertheless have a basis of philosophic truth in the unsolvable mysteries of the divine Architect of Nature.

THE FIRST AND GRANDEST ORATORIO IN HISTORY.

How much of music, as we understand the art, the old Egyptians knew and practiced, may be inferred from the sacred Hebrew record. The foreign people who went out from the Delta of the Nile, in the great exodus fifteen hundred years before our era, after four hundred years' residence, were skilled in the music of song, the harp and the timbrel, and all other instruments known to the Egyptian. That words were written in the form of song, or oriental poetic prose, and music composed to emphasize and inspire the same somewhat in the modern style of our musical authors, is apparent from the delineations upon the walls of temples and tombs, of musical instruments, and even concerts of artistes in the courts of the Pharaohs, celebrating praises to Isis and Osiris, or events of war and conquest. That the Hebrews there resident had become equally skilled with the native Egyptian, is unquestionably demonstrated in even the brief outline of the sacred record wherein is disclosed the theme, the ascription of praise and a few of the words of the first and sublimest Oratorio of antiquity, *The Triumph of the Red Sea.*

The celebration of national events in modern times is principally by the speeches of orators and statesmen; in antiquity, by music. The speech of Paul at Mars Hill, the grandest oration of later times, cast into the shade the orations of Demosthenes, Pericles and Cicero of earlier ages, but is no fuller recorded or better known to-day than is the burden of the triumphal song of Moses. The event which the Hebrews celebrated was by music, the most natural and expressive outburst of the soul in praise to God for national deliverance. Orators and speechmakers, like those of modern times, would have been tame, inexpressive, and would not in that day have been reported so as to have been transmitted to subsequent ages. But music lives when speech is lost.

The Oratorio of the Red Sea was no ephemeral or hasty affair. Preparation was made and time was set for the national cebration. The great theme was written, and nobler strains of music were composed, than ever had sounded in Egyptian temple, or wafted around sphinx or pyramid. The singers were selected, and the instruments determined. When the time arrived and all was in readiness, and the great audience of Israel were seated, the curtain was raised and Moses, the leader of men and the master of music, appeared upon the stage and voiced the wonderful composition contained in the fifteenth chapter of Exodus, chorused by

the audience: "I will sing unto the Lord, for He hath triumphed gloriously; the horse and his rider hath he thrown into the sea. The Lord is my strength and song, and He is my salvation; He is my God, and I will exalt Him. Pharaoh's chariots and his host hath He cast into the sea; his chosen captains also are drowned in the Red Sea. The depths have covered them; they sank into the bottom as a stone. With the blast of Thy nostrils the waters were gathered together; the flood stood upright as a heap, and the depths were congealed in the heart of the sea."

In the next act appeared the first and most renowned *prima donna* of history, the beautiful daughter of Israel. Miriam, the prophetess, and the accomplished sister of the leading star. With timbrel in hand, she was followed by a great choir of women, also with timbrels, and Miriam struck the note: "Sing ye to the Lord, for He hath triumphed gloriously; the horse and his rider hath He thrown into the sea."

Such are the dim outlines of the first great concert of the world. History is silent touching the reception of the renowned singers, or the applause with which they were greeted, the *bouquets* that were showered upon the graceful Miriam, or other demonstrations of professional regard; but a sensible mind cannot deem it as treating lightly the sacred record when it is considered that humanity is substantially the same in all ages. Had we the *libretto* of the occasion, with the names of all the singers, or a copy of the Migdol *Daily Tribune* of the next morning after the Oratorio of the Triumph of the Red Sea, the present and the remote past would doubtless seem not very much unlike. The reporters might be relied upon for an exact and impartial account, while probably the Pharohonic editor would have an editorial characterizing the concert as a failure, and the ascription of praise to the God of the Hebrews as but an insult to Apis and the sacred Crocodile.

MUSIC IN THE LAND OF THE MUSES.

Egypt was the educator of Greece, and in process of time music was wafted to the shores of the Ægean Sea. Here it underwent a new nomenclature, and its principles were symbolized with the gods and goddesses of the mythical age, until in later times the philosophers, Pythagoras, Aristotle and others sought its principles in nature. The ultimate result was that all is number and harmony. Numbers are the guides and preservers of the harmony of the universe. They define form, order and the laws of things. In them is contained the real being of all things that exist. All numbers are repetitions of the first ten. The ten *spring from* unity, which is therefore the origin or all things. The great

number is the number four, for if added to the first three, produces ten, the limit and consummation of the fundamental numbers. In the number one, the point is contained; in two, the line; in three, the superfices; but in four—the first square—is the defining of all bodies. This is therefore the root of nature. Numbers are the spiritual essence of music. What we hear in the vibrations of a material are numbers. In the motion of the heavenly bodies, we see numbers. Music and the celestial bodies are therefore closely related to each other. Ratios in the length of strings were discovered by Pythagoras, or by the Egyptians. All things, whether seen or heard, were numbers and harmony. "Therefore," says the Greek, "it is the business of music not only to preside over the voice and musical instruments, but even to harmonize all things contained in the universe." God organized all nature according to the laws of harmony, was a tenet of the Greek. The lyre was considered a symbol of the cosmos. The heavenly bodies were musical instruments sounding forth melodies of indescribable sublimity. The laws of harmony were the same laws that built and preserved the universe. In consequence of this sublime conception, the practice of music was enjoined as a highly virtuous and especially meritorious action, "for music," said Pythagoras, "purifies the soul." Another philosopher held that "the soul is a tension of the body; and that, as vibrations are produced on strings, so the emotions manifested themselves by producing vibrations on the body—the soul acting as tension."

MUSIC IN WESTERN EUROPE.

The course of music, like the emigration of peoples and the star of empire, was westward. From the rise of Christianity, through the dark and gloomy thousand years known as the Middle Ages, and until about the fifteenth century, music in Western Europe was principally under the control of the ecclesiastics, and utilized almost exclusively in the service of the Church.

As the ancients beheld in music manifestations of the same causes that produced the elements or planets, so the scholastics and monks, to show equal wisdom with the Eyptian and Greek philosophers, also symbolized the principles of music, but wholly referred the same to scriptural typifications, rather than to those of nature. The relation to what was termed the plagal and authentic modes they conceived such typical of the chariot wheel within a wheel, described in the vision of Ezekiel. Music was a symbol of the Church in that it was composed of many parts. It was cosmical and human; so the Bible was divided into two Testaments.

There were three classes of musical instruments: so of course they corresponded to Faith, Hope and Charity. A composition is composed of a first, middle and final part; wonderfully, it was supposed or pretended, significant of the Trinity. And so the monks continued to symbolize *ad infinitum*, outdoing all heathen antiquity in the matter of the symbolization of music. It is not recorded that the monks compared it with, and extolled it as *physic* either for body or soul, but with their never-ending extent of inapt and illogical symbolization, physic suggests itself.

The first record of a singing school is that of one established in Rome by Pope Sylvester, A.D. 330. The kind of music taught is unknown, but limited doubtless to the customs of the Church, and adapted to hymns and chants.

Seventy years afterwards, St. Ambrose, Archbishop of Milan, took an interest in the culture of music, and arranged the four diatonic scales, known as "The Authentic Mode," composed himself new hymns and chants, and organized a fine choir in his own church at Milan. The Authorized Mode did service for about two hundred years, till it became deteriorated or unfashionable; when Gregory the Great (590), during his pontificate, undertook the work of musical reformation and improvement, and it is said, restored to Church song that solemnity of character which it had gradually lost. The modes he established are known as the "Gregorian Modes." He established a school, at which his system and the order of the Church Service were systematically taught. The system founded by this prelate became universal in Christian countries, and schools were established in principal dioceses, but not so much success was met with as anticipated, owing to the untutored condition of the people, who in that age were rude in the extreme.

Two hundred years later, the Emperor Charlemagne (800) founded music schools at Metz and other towns, and placed them under Italian singers of note. Alcuin, a British ecclesiastic, an accomplished teacher of the Gregorian system, was employed by the Emperor as Principal in these schools The interest which Charlemagne took in this enterprise established the Gregorian system throughout Europe.

Musical notes were but dots and scratches until about the year 1050, when Guido of Arezzo added two lines to the staff, and invented the terms *ut, re, mi, fa, sol, la, sa*, which are substantially as known to the student of music to-day. There had ever been a necessity for having the musical language expressed by fixed and invariable signs. This made the language of music universal—the Englishman, Frenchman, German

and Italian, who did not know enough of each other's language to exchange salutations, could thenceforth sing and play from the same printed or written music in harmony. This great discovery and revolution in musical notation was evolved out of the first syllables of the little Latin hymn of St. John the Baptist, a special and determined character being assigned to each. This hymn is composed as follows:

Ut queant laxis
*Re*sonare fibris
*Mi*ra gestorum
*Fa*muli tuorum
*Sol*ve pulluti
*La*bii rectum
*Sa*nctae Johannes.

Ut was afterwards changed for *do*, and *sa* for *si*, by some acknowledged musical authority as being more euphonious, but otherwise the same little syllables have done the world a service and held their place for eight hundred years.

PRIMITIVE SONG.

Notwithstanding music as a cultivated art was appropriated chiefly to the uses of the ecclesiastics in the long and gloomy period of more than a thousand years in Western Europe; there was nevertheless, a kind of native music and song among the untutored, and even the most rude and uncivilized of the people. The Scandinavian of the frozen North, the ancient Briton, the Caledonian Highlander, the primitive Welch, the Hibernian, the Basque of the Pyrenees, the Gaul and the Teuton, had their primitive poets, scalds and sagas, who composed or improvised of love and war, and entertained their families or friends in their rude huts, or crowds in the villages and incipient cities, with singing or droning recitations more or less melodious. Such was the secular music.

TROUBADOURS AND MINSTRELS.

After the Cruades of the eleventh and twelfth centuries, which had exhausted in a measure the fanaticism, bigotry and intolerance of the age, and more than decimated the people of Europe in a war with the Saracens of Palestine, there was a new birth of poetry and song. Superstition had vanished under the realities of the sword of Saladin. Those who lived to return had learned something of the wisdom of the world, and were happy to see the hills and vales of France once more, even as beggars, where once they had been princes and owners of great estates.

Fascinated by the graceful and ornate songs of the Orientals, which they had learned, they imitated them and introduced into France a new melody and a new song. Thus came the *Troubadours* and Minstrels with their songs of glory, tenderness and love.

> "Gaily the Troubadour touched his guitar,
> As he was hastening home from the war,
> Singing, from Palestine hither I come,
> Lady love, lady love, welcome me home."

The art of the Troubadours was entitled the *gaie science*, and to the idea of gaiety a noble meaning was attached. Gaiety, or joy, was a state of mind regarded as corresponding with that of religious grace. The end of their profession was the service of religion, honor and woman in deed and in song. One of their mottoes was; "My soul to God, my life for the king, my heart for my lady, my honor for myself."

The most famous of the Troubadours, or Wandering Minstrels, was Adam de la Hale, about 1280, who wrote songs in three-part harmony, the melodies of which would be accounted agreeable even in the present day. They were not unlike the popular "Folk-Songs" of Southern France aud Northern Spain, as still sung by the rural population in those provinces. As in those early times, Church music was in the hands of ecclesiastics, so these Troubadours were the chief composers of secular music. In France, the songs of the people were the *chanson;* in Germany, the *Lied;* in England, the *song* and the *glee;* in Italy, the *frottole, villotte, canzonet.* The folk-song of the Swedes, Poles and Hungarians have been introduced to the world. and proven to be quaintly original and very beautiful. Among the folk-songs of the Scotch, are many which are judged to antedate the Christian religion, whose form, it is believed, can be traced back to the Phrygian and Dorian Greek; such as "My Boy Tammie," "Roy's Wife of Aldivallach," "Reel of Tulloch," and even "Scots wha hae wi' Wallace bled." From the old *Bards* of Erin and Scotia, of the days when "The harp that once through Tara's halls its soul of music shed," to that which Scott invoked in the "Lady of the Lake," "Harp of the North that mouldering long hast hung on the witch-elms that guard St. Fillan's spring," have descended to us nearly all those strains of melody so familiar, so dear to the heart, and so awakening to the emotions, not only to the native, but to the American people who are by descent the inheritors of the spirit, poetry and song of the old races of the North. Ossian's "Invocation to the Sun," from out the cold, bleak mountains of the north, still awes us by its grandeur, and "The Pibroch

that thrilled in Glen Fruin," to-day inspires the Highland regiment alike in the jungles of Africa and upon the sultry plains of India.

REFORMATION PERIOD.

About 1502, Ottavio Petrucci invented the means of printing music by movable metal types. Through this most important invention of printing musical works, their cost was much lessened, and the music-loving public was enabled to possess the recognized works of the best composers.

It is claimed that music schools for strictly ecclesiastical music were established at Canterbury, the seat of the first Church established by the Roman Pontiff, and still the seat of the Protestant Primacy of England, as early as 825; and that later in the same century the Great Alfred, whom the old chronicles credit with being himself an excellent musician, founded a professorship at Oxford. The improved Gregorian music remained in use, in connection with the offices of Religion, until the dawn of that revolution inaugurated in Germany, known in history as the Reformation; when its leaders, differing materially in their opinions of the manner in which the Art of Music was to be rendered most effective to their objective ends, a complete change was felt in the music of the Church. The great leader of the Reformation, Luther, in his attack upon the Church of Rome, though bold and uncompromising, nevertheless, as he had been taught music, and had formed a high opinion of its influence for good upon the human heart, instead of abolishing the good in music from his new form of worship, he made it his business and highest aim to encourage its cultivation as an eminently Christian Art, and for that purpose adopted a religious service in German to the ancient and grand music of the Roman Mass; and introduced a variety of Hymns and Psalms into the Church—some of the best of which he is said to be the author. John Calvin, the great contemporary of Luther, is credited with doing a similar work for France and Switzerland, and for the like purpose.

The progress of the Reformation may possibly be attributed quite as much to the new and melodious tunes adapted to the venerable psalms and hymns as to any material change in orthodox theology; for a contemporary of Luther—an adherent of the old Church—complained, it is said, that "the whole of Germany was singing itself into the Lutheran doctrine," Such items of theological history are here used, however, only as showing what wonderful influence has ever been attributed to music in all great events in past ages. That music has a place in all histories—is ever written and talked about.

The poetry of the Reformation, wedded to music worthy of it, was treasured in the hearts and homes of the faithful, from the mountains of Switzerland to the shores of the Baltic, and from the banks of the Rhine to those of the Vistula and Danube. In addition to the German sacred songs, a number of hymns, translated from the older poets of Bohemia, were greatly prized in the land of Luther. The Church songs in use among the Germans and Bohemians were the old Hymns and Sequences. The Psalms, so dear to the fathers of the Church, and which, in earlier ages, formed the true liturgy and hymn book of the people, were not yet recalled by the new Church to their old place of honor in the service of the sanctuary. To the Reformers remained the duty of solving the question of a Service of Praise, and the possible revival of the love of the early Christian Church for the Psalms of David.

In England, as in Germany, the object of the Reformers being to purify Religion from whatever was corrupt, retaining all that was good, choral music was preserved, particularly in the Cathedrals and Collegiate Churches. Henry VIII. (1521), a devotee of music, in connection with his Minister, Cardinal Woolsey, preserved the Choral Service in its most perfect and solemn forms; and schools for music, connected with all the Cathedrals, were sustained.

In the reign of Elizabeth, from 1558, the Papacy was abolished, with all the usages of the Romish Church, and the English Church was established. For nearly a century from this time, continual changes in the government, civil war, and the consequent disregard of the arts and higher forms of education, allowed the taste for, and the cultivation of music to be neglected. It was indeed banished from the Churches, and in a great degree from private families. By an ordinance made in 1644, organs in Churches and Chapels were taken down, and an infuriated populace demolished these instruments. At the succession and during the reign of Charles II., the clergy were returned to the station and property of the Church of which they had been despoiled, and music as an art rose again.

From 1500 to 1545, under the great Italian masters, the art of music as employed in the service of the Catholic Church at Rome and elsewhere, progressed till it found its culminating point in the advent of Palestrina, who was regarded as the model composer of the noble style of Church music. By idealizing in the sense of the Catholic Church, its mystic religious life, by ennobling, enriching and purifying its inward contents he perfected the organism of his art. The musical drama, or

opera, as it was afterwards called, was at this time the center of attraction for the talent and genius of some of the most able musicians of the century; and owing to the fact of its increasing popularity, as also affording a more abundant remuneration for the labors of the composer, Church music began to be neglected, save by those inspired souls who felt themselves particularly chosen to advance sacred art. Palestrina, however, remained true to the traditions of the systems of the ecclesiastical modes, and was ever afterward recognized as the *savior of Church Music.*

The gradual and successful development of the musical drama had a marked effect upon the growth of music in the Church. The old ecclesiastical keys were gradually transformed into the more modern system of tonality, and eventually the whole character of musical composition was changed, although for more than a century, the successors of Palestrina adhered to the art principles of their great master. Most of the composers, both Italian and German, up to the beginning of the Eighteenth century, were successful in the musical drama, as well as in the music of the Church, and up to that time, they had maintained a visible line of demarcation between the two distinct types of composition. At the commencement of the Eighteenth century the form of the *drama per musica*, or opera, was distinctly felt in the mass, hymn, psalm, and other Church music, and the old tradition of a strict church style was banished from the mind of the composer.

There were four distinct schools in Italy, that of Rome, the Neapolitan, the Venetian, and the Bolognese. At Rome, Allegri, Agrostini and Carrisimi followed the traditions of Palestrina. Gregorio Allegri, a singer and composer in the Pope's Chapel at Rome, 1629, composed the *Miserere* which for more than a hundred and fifty years, was performed on Wednesday and Friday during Passion-week, in the Papal chapel. This *Miserere* is in appearance of a simple form, consistsng of two alternate choruses, one in *four parts* and the other in *five parts*, the two being brought to simultaneous concord at the last verse of the hymn. The effect produced by the composition is in a great measure due to a peculiar traditional manner of rendering with regard to the expression, and frequent changes of light and shade, enhanced by the mystery of the rites belonging to this service. The Pope and conclave are all prostrate upon the ground; the candles of the chapel and the torches of the balustrade are extinguished one by one; when in darkness the two choirs unite in the last verse, the chapel master beating the time slower and slower, the singers diminish, or rather extinguish the harmony to a perfect point, where words fall

far short of expressing the overpoweringly solemn, melting effect of these dying tones, telling in mystic cadence of the passion of Christ.

The great composers of the mass, which is the musical service of the Church of Rome, are Mozart, Hayden, Beethoven, Hummel, Cherubini, who have employed all the debth and tenderness of melody and richest harmony in this kind of composition.

The invention of the ORATORIO, which is a species of musical drama consisting of airs, recitations, duets, trios and choruses is commonly ascribed to St. Philip who founded in Rome, in 1540, the congregation of the Oratory (*orare*—to pray). This ecclesiastic, wishing to distract the attention of his parishoners from the theatre—the mania for which often kept them from their religious duties, formed the idea of having Sacred Interludes written by a poet, set to the music of able composers, and performed by the most celebrated singers. The experiment succeeded; crowds were attracted to the concerts, which took the name of Oratorios, from the Church of the Oratory, where they were performed. The great names identified with this important school of music are Carrissimi (1580), *Jeptha* and *Jonah* are his best known works. Henrich Schultz (1585) is styled the father of German Oratorio. He wrote *The Passion Story of the Resurrection*, and *Seven Last Words*. *Hosanna to the Son of David*, is a composition of an Englishman, Gibbons (1625.)

Henry Purcell, organist of Westminster Abbey, 1677, was styled "the greatest English musical genius." He wrote the *Te Deum* and *Jubilate*, performed at St. Paul's Cathedral, besides many operas. William Croft (1727), wrote the Oratorio *Solomon*. John Sebastian Bach (1750), was a prolific German writer of Oratorios. Handel (1759), is the author of many celebrated works, among which are the *Messiah*, *Samson* and *Belshazzar*. Hayden composed a large number of symphonies, operas, masses, concerts, quartettes and trios and other instrumental works. At the age of 66 he produced the great Oratorio of *The Creation*. This work produced a profound impression at the final performance, which took place at Vienna. The fame of *The Creation* spread through Europe; in England it has long been second only to *The Messiah* in popular favor.

In Opera, Gluck, Mozart and Beethoven are the great names in German musical history. Gluck (1787), whose first opera was *Artaxerxes*, produced in Milan. It was followed by *Clytemnestra* and *Demetrio*. He visited England and produced *Caduta del Giganti* and *Artamene* at the Haymarket. Mozart in 1770 produced his Opera *Mitridate;* next *La Finta Geardiniera* and *Idomeneo*. *Don Giovanni* is his most celebrated

operatic work, while his *Requium* holds a high place in the publie regard. Beethoven's *Mount of Olives* is the most celebrated of his Oratorios, bu his works are numerous. Since the above great names have come Hum_ mel, a pupil of Mozart, Spohr of Brunswick, whose Oratorio, *The Last Judgment* and *Calvary*, are best known in this country. Karl Von Weber, (1786 to 1826) opens upon the musical world with his opera *Der Freischutz*, followed by *Oberon* for the English stage, and *Euryanthe*. Weber's works are very popular to-day. Franz Schubert ('97 to '28), wrote *Hagar's Lament*, *Rosamond* and *Miriam's Battle Song*. Jacob Myerbeer('94 to'64), produced the *Huguenots*, *L'Africans*, *Jeptha's Daughter*, *Margherita d'. Anjou*, and *Robert le Diable*, all of which are alive, popular and familiar to all. Felix Mendelsshon Bartholday's (1809 to 1847) last great work was the *Elijah*, composed for and produced at the Birmingham Festival of 1846.

Robert Schumann (1810 to 1856)), composed *Paradise and The Peri*, a setting to music of Moore's *Lalla Rookh*, an opera *Genevieve*, *Manfred* and the *Pilgrimage of the Rose*. Aube r (1782 to 1871), for many years director of the Paris Conservatoire, devoted, was the author of *Fra Diavolo* and numerous other works. Rossini (1792 to 1868), produced for the Carnival at Rome in the year 1816, the *Barbiere di Siviglia* and *Moses in Egypt*. His great contemporaries were Bellini who composed *Norma* and *La Somnambula*. Donizetti, author of *Lucrezia Borgia*, *Lucia di Lammermoor*, *Don Pasquale* and the *Daughter of the Regiment*. Gounod stands at the head of French composers of the present day. His contemporaries are Ambrose Thoreau, Flotow and Offenbach, the latter the composer of *La Grande Duchess*, *Barbe Blue*, etc. Joseph Verdi is unrivaled among the Italians. He is the author of *Il Trovatore*, *Erani*, etc.

Richard Wagner (b. 1813), has of late years been the subject of bitter controversy among musicians. He is the author of *Tannhausers Lohengrin;* and his last great contribution to the "music of the future," is the *Der Ring der Nibelungen*. His methods are becoming better understood, and the Hungarian, Listz, is among his strongest advocates.

These names are only a few of the many hundreds of great and distinguished names in modern music, either as composers or executors of renowned compositions, whether for the voice or instrument. Of the noted artists who are most familiar to the present generation, may be mentioned Mario, Malibran, Grisi, Jenny Lind, Garcia, Alboni, Albani Campanini, Anna Louisa Cary, Kellogg, Lucca, Nilsson, Adeline Patti Carlotta Patti, Parepa-Rosa, Piccolomini, Adelaide Phillips, Sontag

Titiens, Emma Abbott, Mrs. Seguin, Maria Roze, Minnie Houck and Hilbron.

INFLUENCE OF MUSIC.

A marvelous power has been attributed to music in all ages of the world. It was the source of a multitude of fables in which exaggeration and imagination played a chief part. But whatever the stories, and however improbable they may be, they nevertheless bear witness to the importance of music and its power of fascination.

That Orpheus tamed wild beasts by the bewitching tones of his voice is not strange or remarkably wonderful, for music is resorted to daily by tamers of animals in caravans perambulating the country for the instruction and delight of the rising generation. And it is told of a Northern lady who spends her winters in Florida that she possesses the fascinating gift of calling around her a variety of beautiful birds of the forest, some of which will perch upon her head and shoulders and flutter at her feet, captivated by her sweet voice and gentleness of spirit. But if Amphion erected the wall of Grecian Thebes by means of his songs, it must doubtless be taken in a modern sense. The fact probably is that the city in its infancy had not resources equal to so great a municipal undertaking; so Amphion, who was a splendid musician and a public-spirited person, as good musicians are with us, to meet the financial exigencies of the city, gave a series of concerts which were so popular that gentlemen and ladies of wealth and musical tastes approved and patronized, and thus the walls of the Thebes were erected.

Bunker Hill Monument remained untouched for years after the foundation was laid, for want of funds, and until an impetus was given to the enterprise by a celebrated artist, the wealth of whose accomplishments were coined into money and the proceeds of her entertainments generously contributed for the payment of the toiling men in the granite quarries at Quincy.

Plato said no change could be made in music without a similar one being made in the State. And Aristotle contrasted the musical race of Arcadia for gentleness of manners with the country of the unmusical Cynetes.

The Emperor Nero, concerning whom history charges that he toyed with music in a moment of dire calamity, was reputed a good musical artist, having studied under Greek masters. The old story has been handed down by historians as truth, each writer aggravating the case by some additional particulars, no matter how obtained. The real facts

doubtless were that on the evening when the fire broke out there was a music *soiree* at the Emperor's palace, at which were in attendance a select circle of Roman artists. That when the bells sounded the alarm the Emperor and company were in the midst of a rehearsal of some grand piece of musical composition, and did not suspend execution till the final bar was closed. The concert then would have broken up had not the Prefect (the Mayor of Rome), come in haste to the palace to notify the Emperor, and quiet the fears of the imperial court and the guests of the evening, that there was not occasion for alarm. So the Emperor bid his guests remain the balance of the evening, and he condescended to favor the company with a *violin solo*. His enemies, possibly availing themselves of some such circumstances, exaggerated them, and history has perpetuated an error. It is safe to conclude that the enemies of Nero had no respect for musical art, and could not appreciate the civilities of his court in remaining with his company of distinguished artists instead of dismissing them.

According to the most ancient traditions, the bagpipe has always been the favorite instrument of the Scotch, since it was first introduced into the country at a very remote period by the Norwegians. The larger one figures in their battles, funeral processions, weddings and other great occasions; the smaller sized one is devoted to dancing music. Certain martial airs, called *pibrochs*, produce the same effect upon the natives of the Highlands, as the sound of trumpets does on their chargers, and sometimes even wonders are performed almost equal to those attributed to the music of ancient Greece, for which we have Gibbon, the historian, as authority.

It is related that at the battle of Quebec, in 1768, while the British troops were retreating in disorder, the Commander complained to a staff officer of Fraser's regiment, of the bad behavior of his corps. "Sir," replied the latter with some warmth, "you made a great mistake in forbidding bagpipes to be played; nothing animates the Highlanders to such a degree, at the hour of battle; even now they might be useful.' ' "Let them play as much as you please," answered the Commander, "if that can recall the soldiers to their duty." The musicians received an order to play the favorite martial air of the Highlanders; as soon as the latter heard the familiar tones they paused in their flight and returned with alacrity to their post.

Only last month (Dec. 1881), His Royal Highness, the Duke of Edinburgh, presiding at a soiree of the directors of the Athenæum at Free

Trade Hall, Manchester, England, for the advancement of musical science, in his admirable address, reported in the Manchester *Times*, happily illustrates the influence of mnsic His Royal Highness said: "There is the resolution which music can infuse into a body of soldiers, who can have their fatigue lightened and their step quickened even by the simple notes of the drum and fife, and who by the martial sound of the 'War March' may be animated to face the greatest dangers. I might mention the remarkable effects of music on the inhabitants of mountainous countries. Certain tunes are, I believe, prohibited in the Highland regiments, because of the intense longing for home which they produce in the men on foreign service. The same is the case with the Swiss, and this desperate desire for home, excited and aggravated by the national music of the country, has even been classified as a distinct disease under the name of nostalgia."

During the Sepoy rebellion, in India, an army correspondent of the London *Times* made some depreciating remarks touching what he seemed to consider the trivial pastimes and amusements of the Highland regiments, on the night of their last bivouac on the banks of the Ganges, on their march to the relief of Lucknow, because they whiled away some sleepless hours by singing "Bonny Doon" and "Mary's Dream."

> "The moon had climbed the highest hill
> That rises o'er the source of Dee,
> And from its eastern summit shed
> Her silver light on tower and tree.."

Something of pity should be awarded the man whose soul was not gifted to appreciate the most felicitous of Scotland's lyrics, and its sweet and plaintive melody, upon the sultry plains of Hindostan. But when, in the beleaguered city, the practiced ear of the Scotch lassie, Jesse Brown, heard in advance of all others the distant notes of the bagpipe, and frantic with joy, ran with streaming hair through the streets of Lucknow, crying, "The Campbells are coming!—dinna ye hear the slogan?" English women and children in the beleaguered city had no criticisms for the songs of the Highlanders, or the wild and piercing notes of the bagpipe.

It is related, in a note to one of Walter Scott's novels, that in the Peninsular war, Sir Eyre Coste, appreciating the attachment which the Highlander feels for the music of his native country, gave them fifty pounds after the battle of Porto Nuovo with which to buy bagpipes, as a token of his satisfactien with their conduct on that day.

The national songs of a people, the music and melody of which are so blended with the sentiment that the effect upon the heart and mind is nearly the same whether words or tune are heard, inspire the soul like the sight of the flag. What would be our country, what England, or what France, if the spirit of the national songs were eradicated from the hearts of the people? When "The Star-Spangled Banner" shall no longer inspire the patriotic heart with enthusiasm and delight, the Republic will have fallen. When "Rule Britannia" shall no longer be sung in the land of Victoria, the dominion of England will have ceased in the four quarters of the globe; and when the *Marseillaise* shall be forgotten by her gallant sons, France will have become Cossack indeed.

It is a gratifying evidence of the civilization and culture of nations when people manifest an international spirit to that degree which enables them to appreciate and cherish the national songs of each other. This has long been done between America, England and France. And now we can add to the list of courteous nations the great German Empire. It is related in the *Boston Musical Herald*, of January, 1881, that "Miss Emma Thursby sang at Baden-Baden a few weeks sinee, and the audience included the Emperor and Empress of Germany, the grand duke and duchess of Baden, the crown prince of Germany, and the princess and a large number of the nobility. There were several encores, in which the Emperor and Empress heartily joined. When called out at at the close of the concert, she sang *The Star Spangled Banner*, and the Emperor is said to have pronounced it the finest national ode he had ever listened to."

"Peace hath her triumphs no less renowned than war," and music is the harbinger of peace. The musical artist is to be the future diplomatist. Music is destined to banish war. The mission of music and her artists is destined to grand results, not only in the culture of the people, but in the pacification of nations.

In contemplating the grandeur and glory of the works of the great masters of music, we should not, however, forget the sweet songs of childhood and the cradle. Song is cultivated from the cradle, and mother is the ever-remembered teacher. Some one has said that the last thoughts of a dying old man are of his mother's face and voice when she sang to him in infancy. So the song and its melody once learned from the lips of a mother abides to the end. Let us cherish the national melodies and songs.

Music being a science, discovered in and evolved from nature, must be developed and illustrated by its great devotees and learned masters like the other sciences. It should not be charged as a disparagement to the general intelligence of the great mass of the people that they are not adepts in its profound mysteries, and skilled in the illustration of its wonderful harmonies, like the great masters and artists of our time. Music ranks with Astronomy, but how many of all whom we are pleased to call learned or appreciative, of both men and women, who take delight in contemplating the starry heavens, comprehend mathematical Astronomy? How many among them delight in the perusal of the *Mechanique Celeste* of La Place, the computations of Lagrange and Leveriere. or our own Stockwell's voluminous and famous problems of the secular variations of the orbits of planets? Yet how few there are who do not find the highest gratification when some tuneful master like Richard A. Proctor touches the strings of the Astronomical harp of the universe, and makes even mathematics melodious.

PROGRAMME

OF THE

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1. January 14—Grand Concert, conducted by Mr. Alfred Arthur.
2. January 21—Dr. J. H. Vincent, Eloquent Advocate of Education for the People. Subject, "The Every-day College."
3. January 28—Hon. George M. Towle. Subject, "Gambetta, the Famous French Premier."
4. February 4—Prof. W. C. Richards. Subject, "Fascinating Electric Forces." Brilliant Experiments.
5. February 11—Prof. W. C. Richards. Subject, "Wonders of Air and Water." Brilliant Experiments.
6. February 18—Rev. T. DeWitt Talmage, D.D., the Gifted Divine.
7. February 25—Mrs. Mary A. Livermore, the Ablest Woman in America.
8. March 4—Dr. A. A. Willits. Subject, "Sunshine."
9. March 11—Grand Concert. Fisk University Jubilee Singers, Patronized by Kings and Princes.
10. March 18—Not yet settled.
11. March 25—Grand Concert, conducted by Prof. N. Coe Stewart.
12. April 1—John B. Gough, the Orator of Orators.

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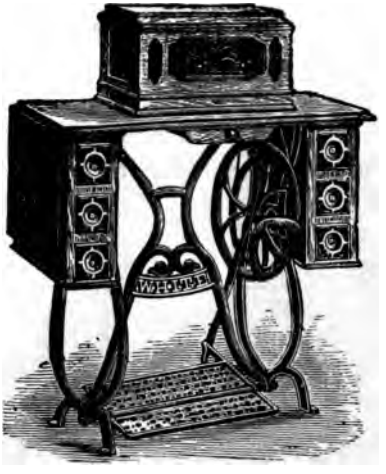

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"HAPPY IS THE MAN THAT FINDETH WISDOM."
—*Solomon.*

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1882.

INTRODUCTION.

A PROVERB is difficult to define. Isaac D'Israeli, who has a valuable paper on proverbs, truly observes that "proverbs must be distinguished from proverbial phrases, and from sententious maxims; but, as proverbs have many faces, from their miscellaneous nature, the class itself scarcely admits of any definition. Johnson defined a proverb to be "a short sentence, frequently repeated by the people."

"The pithy quaintness of old Howell has admirably described the ingredients of an exquisite proverb to be *sense, shortness and salt.* A proverb is distinguished from a maxim or an apothegm by that brevity which condenses a thought or meataphor, where one thing is said and another is to be applied, which often produces wit; and that quick pungency which excites surprise, but strikes with conviction; which gives it an epigrammatic turn."

For all general purposes the definition of D'Israeli will suffice; and he very happily says "that these abridgments of knowledge convey great results with a parsimony of words prodigal of sense." An essential feature in proverbs is the condensation of much thought and observation within a small compass.

Proverbs were the germs of moral and political science, and they not unfrequently constituted the compendious vehicles for the transmission of the dogmas of religion and the first principles of philosophy, arts and sciences. In this shape, oral tradition preserved among primitive ages the knowledge of times still more remote.

Brevity is a distinguishing characteristic of all proverbs. Weight of sentiment and justness of metaphor ought to be another, to justify the eulogy of Tillotson, where he says, "the little and short sayings of wise and excellent men are of great value, like the dust of gold or the least sparks of diamond." Some excite attention by a witty and unexpected combination of ideas, and others by a caustic or sly humor, while not a few, and these perhaps not the least ancient, can be no otherwise described than as an old writer expresses it—

"Rhymes running in a rattling row."

Proverbs are to the people not only a sort of metaphysical language, but a kind of substitute for philosophical principles. A man whose mind has been enlarged by education, and who has a complete mastery over the riches of his native language, expresses his ideas in his own words; and when he refers to anything beyond the matter under his view glances towards an abstract principle. An uneducated man, on the other hand, uses those proverbial forms which tradition and daily use have made familiar to him; and when he makes a remark which needs confirmation, he clenches it by a proverb. Thus both, though in a different way, illustrate the observation of Lord Bacon, that "the nature of man doth extremely covet to have something fixed and immovable, and as a rest and support to the mind."

POPULAR PROVERBS.

A beggar will never be bankrupt.
A blow with a reed makes noise but hurts not.
A bushel of March dust is worth a king's ransom.
A clear conscience is a wall of brass.
A burden which one chooses is not felt.
A drachm of goodness is worth a whole world of greatness.
A fair face may hide a foul heart.
A fair promise makes a fool merry.
A faithful friend is better than gold, a medicine for misery, an only possession.
A fat kitchen makes a lean will.
A fool's tongue is long enough to cut his throat.
A good layer-up is a good layer-out.
A good name gives strength.
A good name will shine for ever.
A good wife and health are a man's best wealth.
A guilty mind punishes itself.
A handful of good life is better than a bushel of learning.
A hut is a palace to a poor man.
A kindly word cools anger.
A king's face should give grace.
A king's favor is no inheritance.
A light purse is a heavy curse.
A man knows his companion in a long journey and a small inn.
A man who cannot mind his own business is not to be trusted with the king's.
A man's life is an appendix to his heart.
A nod from a lord is a breakfast for a fool.
A pitcher goes often to the well but is broken at last.
A single fact is worth a shipload of arguments.
A stitch in time saves nine.
A thousand pounds and a bottle of hay are all one at doomsday.
A wild goose never laid a tame egg.
A winter's thunder's bodes summer's wonder.
A wise head makes a close mouth.
A wise lawyer never goes to law himself.
A wise man need not blush for changing his purpose.
A woman's heart has a great capacity for doing wonders.
A woman's strength is in her tongue.
Aching teeth are ill tenants.
Adversity flatters no man.
After clouds comes fair weather.
After death the doctor.

Agues come on horseback but go away on foot.
All are not hunters that blow the horn.
All are not saints who go to church.
All is from above.
All is good to the good.
All is not gain that is got into the purse.
All lay load on the willing horse.
All men wish to have truth on their side, but few to be on the side of truth.
All truths must not be told at all times.
Alms are the salt of riches.
An enemy to beauty is a foe to nature.
An honest man's the noblest work of God.
An idle brain is the devil's workshop.
An open countenance, but close thoughts.
As the countenance is so is the mind.
At a great pennyworth pause awhile.
Avarice blinds our eyes.

Bad books are the public fountains of vice.
Be just but trust not every one.
Be not solitary, be not idle.
Be what you seem to be.
Bear and forbear.
Beauty is produced by labor.
"Because" is a woman's reason.
Before you marry be sure of a house wherein to tarry.
Begin nothing without considering what the end may be.
Beauty is potent, but money is omnipotent.
Believe after trial and judge before friendship.
Believe and conquer.
Believe nothing hastily.
Betimes the best gain is to lose.
Better be alone than in bad company.
Better be idle than ill-doing.
Better buy than borrow.
Better health than riches.
Better lose a supper than gain a hundred physicians.
Better lose your joke than lose your friend.
Better suffer a great evil than do a little one.
Better be despised for too anxious apprehensicns than ruined by too confident a security.
Beware equally of a sudden friend and a slow enemy.
Beware of a bad woman, and be careful how you trust a good one.
Beware of him who regards not his reputation.
Beware of a man that does not talk, and a dog that does not bark.
Bid farewell to all grandeur if envy dwell within thee.
Blessed is that misfortune which comes single.
Business makes a man as well as tries him.

Business neglected is business lost.
By doing nothing we learn to do ill.
By others' faults wise men correct their own.
By pride cometh contention.

"Can do" is easily carried.
Catch the bear before you sell his skin.
Chance is the providence of adventurers.
Cheating play never thrives.
Cheerfulness is perfectly consistent with piety.
Cheese is a peevish elf; it digests all things but itself.
Clemency is the brightest jewel in a crown.
Commend nothing so much as strict virtue.
Common sense is an inestimable companion.
Conduct and courage lead to honor.
Conduct thyself always with the same prudence as though thou wert observed by ten eyes and pointed at by ten fingers
Confine your tongue lest it confine you.
Constancy and temperance strengthen virtue.
Constant application overcomes the greatest difficulties.
Contempt will sooner kill injury than revenge.
Courage aims at high things.
Courage is greater than the sword.
Courage ought to have eyes as well as arms.
Courtesy should ever be accompanied by candor.
Craft brings nothing home.
Custom is the law of fools.

Death defies the doctor.
Death will be the funeral of all our evils and the resurrection of all our joys.
Delays are dangerous.
Dependence is a poor trade to follow.
Desires are nourished by delays.
Despise none, despair of none.
Despise your enemy and you will soon be beaten.
Destiny yields to care.
Diligence overcomes all difficulties.
Discretion in speech is more than eloquence.
Do not spur a free horse.
Don't have more secrets than you can keep yourself.

Eagles fly alone; they are but sheep which always herd together.
Early to bed and early to rise makes a man healthy, wealthy, and wise.
Ease and honor are seldom bed-fellows.
Economy is of itself a great revenue.
Employment is nature's physician, and is essential to human happiness.
Equity is the bond of human society.
Every ass loves to hear himself bray.

Every couple is not a pair.
Evil gotten evil spent.

Faith bears the laurel.
Fall not out with a friend for a trifle.
False friends are worse than open enemies.
Fear unbalanced by hope is desperation.
Feather by feather the goose is plucked.
Fidelity crowns.
Fidelity is better than gold.
Flight is a triumph when one flees from temptation.
Fly the pleasure that will bite to morrow.
Follow the dictates of reason, not of passion.
Foolhardiness is not courage.
Fools laugh at their own sport.
For one cruel parent we meet with a thousand undutiful children.
Forethought spares afterthought.
Fortune favors the brave.
Fortune is not satisfied with doing a man only one ill turn.
Forward, not rashly.
Friends tie their purses with a spider's thread.
Friendship gives honors.

Give alms that thy children may not ask them.
Gluttony kills more than the sword.
Go forward, not backward.
God, and parents, and our master can never be requited.
God has placed no limits to the exercise of the intellect He has given us on this side of the grave.
God helps the rich, the poor can beg.
Good at a distance is better than evil near at hand.
Good company on a journey is as good as a coach.
Good intentions will not justify evil.
Good times and bad times and all times get over.
Good wives are made by good husbands.
Gossipping and lying go hand in hand.
Grasp all, lose all.
Grasp no more than your hand will hold.
Great pain and little gain will soon make a man weary.
Grey hairs are death's blossoms.
Guilt is always suspicious and always in fear.

Half a loaf is better than no bread.
Happy is he who knows his folly in his youth.
Happy is he who limits his wants to his necessities.
Haste makes waste, and waste makes want.
Hasty resolutions seldom speed well.
Have a care of a silent dog and a still water.
Hearts may agree though heads differ.
He becometh poor who dealeth with a slack hand.

He gives twice that gives in a trice.
He goes not out of his way who goes to a good inn.
He is a fool who cannot be angry, but he is a wise man who will not.
He is a wise man that leads passion by the bridle.
He is blessed who bears the cross.
He is greater who is better than the rest.
He is the best gentleman who is the son of his own deserts.
He lacks most that longs most.
He loseth nothing that keeps God for his friend.
He prospers who labors.
He prospers who watches.
He scatters enjoyment who can enjoy much.
He that can have patience can have what we will.
He that denieth himself to his country is already an exile.
He that doeth good is better than the good he doeth.
He that hath many friends hath none.
He that is warm thinks all are so.
He that waits obtains what he wishes.
He that will be angry for everything will be angry for nothing.
He that would live for aye, must eat sage in May.
He who can take advice is sometimes supreme to him who can give it.
He who is surety for another is never sure himself.
He who loves good men cannot be bad.
He who lives in hope has a slim diet.
He who promiseth runs in debt.
He who stays in the valley will never get over the hill.
He who swims in sin will sink in sorrow.
Honest fame is the torch of the mind.
Honest men are easily bound, but you can never bind a knave.
Honesty is the best policy.
Hot love is soon cold.
Hungry men think the cook lazy.

Idleness is the parent of want and shame.
If all fools wore white caps we should look like a flock of geese.
If it were not for hope the heart would break.
If the grass grow in Janvier, It grows the worse for't all the year.
If thou wouldst reap money, sow money.
If you have one true friend, you have more than your share.
If you trust before you try, you may repent before you die.
If you wish to escape your enemy or creditor, avoid him not.
If you would enjoy the fruit, pluck not the blossom.
If you would know a bad husband, look at his wife's countenance

In a great river great fish are found,
But take good heed lest you be drowned.

In a thousand pounds of law there is not an ounce of love.
In all labor there is profit.
In every fault there is folly.

In the husband wisdom, in the wife gentleness.
In youth, be temperate; in manhood, just; in old age, prudent.
Indolence is a vice that almost defies reformation.
It costs more to revenge injuries than to bear them.
It is a shameful thing to be weary of inquiry, when what we search for is excellent.
It is better to have a lion at the head of an army of sheep than a sheep at the head of an army of lions.
It is difficult to bear insult without anger.
It is folly to live poor and die rich.
It is not work that kills, it is worry.
It the surest and wisest way to speak less and to think more.
It is vain and unprofitable to be either disturbed or pleased about future things which may never come to pass.

Joy flies monopolists, it caters for two.
Justice consists in doing no injury to men, decency in giving no offence.

Keep no more cats than will catch mice.
Kind confidence begets confidence, and love begets love.
Kind speeches comfort the heavy-hearted.
Know thyself.

Lay the saddle upon the right horse.
Lend thy horse and thou mayst have back his skin.
Let the shipwrecks of others be your sea-marks.
Life, however short, is made still shorter by waste of time.
Little and often fill the purse.
Little boats should keep the shore, Larger ships may venture more.
Little wealth, little care.
Love rules without law.
Lucky men need little counsel.

Make no friendship with an envious man.
Make not your sail too large for your ship.
Man doeth what he can, and God that He will.
Manners often make fortunes.
Many a lash in the dark does conscience give the wicked.
Many hands make light work.
Many would have been worse if their estates had been better.
Memory is strengthened by exertion.
Men are led by trifles.
Men in general are but great children.
Men in general do not live as if they looked to die, therefore do not die as if they looked to live.
Mildness governs better than anger.
Mills and wives are ever wailing.
Mock no man in his misfortunes.
Modesty is the handmaid of virtue.

More words than one go to a bargain.
Much would have more and lost all.

Natural defects are not the creature's fault but the Creator's pleasure.
Neither the sun nor death can be looked at steadily.
Never carry two faces under one hood.
Never quarrel with your bread and butter.
Never sport with pain or poverty.
Never stop the plow to catch a mouse.
Next to love, quietness.
Nobody can live longer in peace than his neighbor pleases.
No great loss but may bring some little profit.
No man can be provident of his time who is not prudent in the choice of his company.
Not wealth but mind.
Nothing comes out of a sack but what was in it.
Nothing is difficult to the brave and faithful.
Nothing without God.

Of all thieves fools are the worst, they rob you of time and temper.
On a bargain think twice.
One ass nicknames another Longears.
One butcher does not fear many sheep.
One lie begets another
One ungrateful man does an injury to all who stand in need of aid.
Open rebuke is better than secret hatred.
Our greatest glory is not in never falling, but in rising every time we fall.
Our own actions are our security, not another's judgment.

Pardon others often, thyself seldom.
Passion is a fever that leaves us weaker than it found us.
Passion is ever the enemy of truth.
Patience cures many an old complaint.
Patience is a plaster for all sores.
Pay what you owe, and what you're worth you'll know.
Peace does not dwell in outward things, but in the soul.
Pleasure arises from labor.
Policy often effects what force cannot.
Positive men are most often in error.
Poverty is safe, great riches are liable to danger.
Prayer prevails against temptation.
Pride is a flower that grows in the devil's garden.
Promise little and do much.
Proud men have no real friends.
Provide for the worst, the best will save itself.
Providence is better than fate.
Providence strengthens courage.
Punctual masters make punctual servants.

Quench not hope, for when hope dies, all dies.
Quick at meat, quick at work.
Quick returns make rich merchants.

Rare is true love: true friendship is still rarer.
Rash judgment maketh haste to repentance.
Rash vows are much better broken than kept.
Rashness is the fruitful parent of misfortune.
Real fidelity prospers.
Regal honors have regal cares.
Rejoice not when your enemy stumbleth.
Religion strengthens families.
Riches are not for ever.

Say well is good, but do well is better.
Saying and doing are two things.
She grieves sincerely who grieves when alone.
Short reckonings make long friends.
Sin, like a disease, is often caught by infection.
So live with men as if God saw you.
Spare well and spend well.
Success is gained by careful attention.
Success too often consecrates crime.
Sudden friendships are rarely contracted without repentance.
Such as waste their own fortune will not be careful of that of others.
Suspect a talebearer and trust him not.

Take heed of wind that comes in at a hole, and a reconciled enemy.
That is gold which is worth gold.
The ass knows not the value of his tail till he has lost it.
The best policy is simplicity and truth.
The best smell smell is bread; the best savor salt; the best love, that of children.
The biggest horses are not always the best travelers.
The brave man is the prudent one.
The desire of knowledge, like the thirst of riches, increases ever with the acquisition of it.
The earth produces nothing worse than an ungrateful man.
The enemy of the bride never speaks well of the wedding.
The first step to knowledge is to know that we are ignorant.
The foolish and the dead alone never change their opinions.
The glory of the world passes away.
The great art of life is to play for much and stake little.
The great secret of life is never to be in the way of others.
The greatest wealth is contentment with little.
The hand that gives gathers.
The handsomest flower is not the sweetest.
The highest branch is not the safest roost.
The idle, who are neither wise for this world nor the next, are emphatically fools at large.
The least boy always carries the great fiddle.
The mob has many heads but no brains.

The more honesty a man has, the less he affects the air of a saint.
The shortest answer is doing.
The way to be safe is never to feel secure.
The wise man does nothing for the sake of being spoken well of.
The worse for the rider, the better for the bider.
There are in business three things necessary, knowledge, temper and time.
There is a great distance between said and done.
There is luck in leisure.
There is no real happiness in this life, but in intellect and virtue.
There is no virtue where liberty is dead.
There is no way to conceal lolly but by silence.
There's no compassion like the penny.
There's no joy without alloy.
They conquer who believe they can.
They love too much that die for love.
They only have lived long who have lived virtuously.
Thinking is far from knowing.
Those who act faithfully act bravely.
Though not always called on to condemn ourselves, it is always safe to suspect ourselves.
Three removes are as bad as a fire.
Time is my wealth.
Time shows all.
'Tis a foolish thing to lay out money in the purchase of repentance.
To be angry is to revenge the fault of others on ourselves.
To be employed is to be happy.
To be unknown is better than too be ill known.
To bear is to conquer our fate.
To forget a wrong is the best revenge.
To know man, borrow the ear of the blind, the eye of the deaf.
To live long it is necessary to live slowly.
To promise and give nothing is comfort for a fool.
To share a heavy burden merely to ease another is noble: to do it cheerfully, sublime.
To the living there is hope; a living dog is better than a dead lion.
Trade is the mother of money.
True liberty consists in the power of doing that which is permitted by the law.
True praise takes root and spreads.
Truth is our best friend.
Truth is the basis of all excellence.
Truth is the daughter of God.
Two sparrows upon one ear of corn are not likely to agree long.

Unbought experience is seldom worth much.
Undaunted minds defy fortune.
Under what strange forms love glides into the heart.

Unfading joys are not of this world.
Unless we do what is useful, vain is our glory.
Upon St. David's day, set oats and barley in the clay.
Use temporal, but desire eternal things.

Vanity makes men ridiculous; pride, odious.
Vanity renders beauty contemptible.
Virtue always flourishes.
Virtue flourishes in danger.
Virtue is as good as a thousand shields.
Virtue leads to heaven.
Virtue survives death.

Want of spirit never gained a friend.
We are sometimes moved with passion, and we think it must be zeal.
We are sure to get the better of fortune if we do but grapple with her.
We never miss the water till the well runs dry.
What has been may be.
What maintains one vice would bring up two children.
What you wish done well, do yourself.
When all is consumed, repentance comes too late.
When anger rises think of the consequences.
When drink enters wisdom departs.
When elder is white, brew and bake a peck.
When elder is black, brew and bake a sack.
When fortune smiles on thee take the advantage.
When rogues fall out honest men get their own.
When rogues fall out many a secret is revealed.
When the sand doth feed the clay,
England woe and well-a-day;
But when the clay doth feed the sand,
Then it is well with England.
When the tide of family affection runs smooth and unbroken, it bears the bark of happiness securely on its bosom.
When the wind's in the south, it's in the rain's mouth.
When you doubt, abstain.
Where man strong in argument fails, woman with her gentle tenderness often succeeds.
Where pride begins love ceases.
Where there is no peace there is no feast.
Who dainties love shall beggars prove.
Who knows nothing doubts nothing.
Why seekest thou rest when thou wast born to labor?
Wide will wear, but narrow will tear.
Willows are weak, yet they bind other wood.
Winter's thunder and summer's flood
Mever boded Englishman good.
Wisdom without justice is but craftiness.
With speedy hand pluck the fruit that passes away.
Without labor there is no arriving at rest, nor without fighting can the victory be gained.

WELSH PROVERBS.

A fair promise makes a fool merry.
A fool will laugh when he is drowning.
A fortunate boor needs but be born.
A man's wealth is his enemy.
A scholar may be gulled thrice, a soldier but once.
All cry, Fie on the fool.
Anglesey is the mother of Wales.
Arthur could not tame a woman's tongue.
Arthur was not but whilst he was.
As long as a Welsh pedigree.

Bad is a bad servant, but 'tis worse being without him.
Bad words make a woman worse.
Better a beast sold than bought.
Better keep now than seek anon.
Better one braggadocio than two fighters.
Better penny in silver than any brother.

Clear conscience a sure card.

Each bird loves to hear himself sing.
Every man's neighbor is his looking-glass.
Every poor man is counted a fool.

Faults are thick when love is thin.

God arms the harmless.
God stays long but strikes at last.
Good is God, and long is eternity.
Good, though long staid for, is good.

Have a horse of thine own and then mayst borrow another's.
Heaven is mine if God doth say Amen.
He loses many a good bit that strives with his betters.
He that has store of bread may beg his milk merrily.
He that shoots always right forfeits his arrow.
He was slain that had warning, not he that took it.

If thou be a stranger be merry and give the first good-morrow.
If thou play the fool stay for a fellow.
Ill doth the devil preserve his servants.

King Arthur did not violate the refuge of a woman.

Little mischief too much.
Long a widow, wed with shame.

Misfortune comes by forties.

No negligence to the magistrate's.
No wisdom to silence.

Only the rich fool is said to speak sense.

Powis is the paradise of Wales.

Respect a man, he will do the more.

Scatter with one hand, gather with two.
Single long, shame at last.

The higher the fool the greater the fall.
The kinsman's ear will hear it.
The lame returns sooner than his servant.
The nimblest footman is a false tale.
The older the Welshman the more madman.
The Welshman keeps nothing till he has lost it.
The wise and the fool have their fellows.
The worst store is a maid unbestowed.
There's more than one yew-bow in Chester.
To escape Cluyd and be drowned in Conway.
Too much cunning undoes.

Villify not your parish priest.

Who hath God hath all, who hath Him not hath less than [nothing.
Wild and stout never wants a staff.
Wise words and great seldom agree.
Woe to the mule that sees not her master.

SCOTCH PROVERBS.

A bawbee cat may look a a king.
A dog winna yowl if ye fell him wi' a bane.
A drink is shorter than a tale.
A fair bride is soon buskit and a short horse soon wispit.
A gi'en horse should na be looket in the mou'.
A great cooser was ne'er a gude rider.
A gude word is as soon said as an ill.
A light purse makes a heavy heart.
A man canna shrive except his wife let him.
A misty morning may be a clear day.
A nod o' an honest man is enough.
A rackless hussy makes mony thieves.
A rowing stane gathers nae fog.
A sorrowful heart's ay dry.
A still sow eats a' the draff.
A toom pantry makes a thriftless gude wife.
A wee mouse can creep under a great corn stack.
A wight man ne'er wanted a weapon.
A' is na tint that's in peril.
A' things thrive but thrice.
Abundance o' law braks nae low.
An hired horse tired never.
An ill plea should be well pled.
An ill turn is soon done.
An illy willy cow should hae short horns.
Ane is na sae soon healed as hurt.
Ane may bind a sack before it be fu'.
Ane may lead a horse to the water but four an' twenty canna gar his drink.
Ane will gar a hundred lie.
As long as ye serve the tod ye maun bear up his tail.
As ye mak your bed so ye maun lie down.
Auld sin new shame.

Be a friend to yoursel and ithers will.
Be the same thing that ye wad be ca'd.
Bear wealth, poverty will bear itsel.
Better a clout than a hole out.
Better a finger off than wagging.
Better a little fire that warms nor a meikle that burns.
Better apple gi'en than eaten.
Better be dead than out o' fashion.
Better gie nor tak.

Better hae ne'er begun than ne'er end it.
Better keep weel than mak weel.
Better sit still nor rise an' get a fa'.
Better sma' fish than nae fish.
Better the ill ken'd than the gude unken'd.
Beware of "Had I wist."
Birth's gude, but breeding's better.
Bring a cow to the ba' and she'll rin to the byre.
By guess as the blindman fell'd the dog.

Cast a bane i' the deil's teeth.
Cats eat what hussies spare.
Changes o' warks are lightenings o' hearts.
Charity begins at hame.
Come na to the counsel unca'd.
Come unca'd sit unserved.
Comes to my hand like the bow o' a pint stoup.
Cauld cools the love that kindles o'er hot.
Conditions mak an' conditions brak.
Count siller after a' your kin.
Courtesy is cumbersome to them that ken it not.

Daughters an' dead fish are nae keeping ware.
Dead men bite na.
Death at the tae door and heirship at the tither.
Do as the lasses do, say na, an' tak it.
Do in hill as ye wad do in ha'.
Do the likeliest, and God will do the best.
Do weel an'doubt nae man; do ill, an' doubt a' men.
Do weel an' dread nae shame.
Do weel an' hae weel.
Drink little that ye may drink lang.
Drunken wife gat ay the drunken penny.

Eagles catch nae flies.
Early master lang knave.
Eat an' drink measurely and defy the medicine .
Eaten meat is gude to pay.
Either live or die wi' honor.
Every man at forty is either a fool or a physician.
Every man can rule an ill wife but he that has her.
Every man wishes the water to his own mill.

Fair hair may hae foul roots.
Fair words brok never bane. foul words mony ane.
Faint heart never wan fair lady.
Fair fowls hae fair feathers.
Far sought and dear bought is gude for ladies.
Falsehood made ne'er a fair hinder end.
Few words sufficeth to a wise man.
Fiddlers' dogs an' flees come to a feast unca'd.
Fools are fain o' flitting.

Fool's haste is nae speed.
Fools set far trysts.
For fashion's sake, as dogs gang to the market.
For luve o' the nurse mony ane kisses the bairn.

Gear is easier gained than guided.
Gie a dog an ill name an' he'll soon be hanged.
Gie a man luck, an' fling him in the sea.
Gie o'er when the play's gude.
Glasses and lasses are brittle ware.
God ne'er sent the mouth but the meat wi' it.
God's help is nearer nor the fair even.
Great barkers are nae biters.
Gude cheer and gude cheap gars mony haunt the house.
Gude fowk are scarce, take care o' ane.
Gude watch prevents harm.
Gude will should be taken in part o' payment.
Gude wine needs na a wisp.

Hae God, hae a'.
Ha'f a tale is enough for a wise man.
Hame is hame be it e'er sae hamely.
He is a proud lad that winna scrape his ain hole.
He that is born to be hanged wlll ne'er be drowned.
He is gude that failed ne'er.
He is na the fool that the fool is, but he that wi' the fool deals.
He is wise wha can mak a friend o' a fae.
He is worth nae weel that can bide nae woe.
He should have a long shafted spoon that sups kail with the deil.
He rises o'er early that is hanged ere noon.
He that comes first to the ha' may sit whar he will.
He that marries ere he be wise will die ere he thrive.
He that may na as he wad maun do as he may.
He that's ill to himsel will be gude to naebody.
He that winna when he may shanna when he wad.
Hear a' parties.
Hunger is gude kitchen meat.

I canna find baith tales an' ears.
It is fair in ha' when beards wag a'.
It is hard to sit in Rome an' fight with the pope.
It is na the habit that maks the monk.
It is a sin to lie on the deil.
It is weel said, but wha will bell the cat.
It's an ill wind that blaws naebody gude.

Joke at leisure, ye kenna wha may.
Joke an' let the jaw gae o'er.

Kail spares bread.
Keep the feast to feast day.
Keep the staff in your ain hand.
Keep your tongue wtthin your teeth.
Kindness lies na aye on ae side o' the house.
Kings are out o' play.
King's caff is worth ither men's corn.
Kings hae lang ears.

Lads will be men.
Laugh at leisure ye may greet ere night.
Law-makers should ne'er be law-breakers.
Light burdens brak nae bones.
Little winning maks a heavy purse.
Loud in the loan was ne'er a good milk cow.
Luve's as warm among cotters as courtiers.

Mak a wrang step an' down ye gae.
Mak na meikle o' little.
Mak the best o' an ill bargain.
Mak your hay when the sun shines.
Malice is ay mindfu'.
Meikle spoken part spilt.
Meikle wad hae mair.
Men are blind in their ain cause.
Mony cooks ne'er made gude kail.
Mony hands mak light wark.
Mony hounds may soon worry ae hare.

Nae plea is best.
Nae wonder to see wasters want.
Nearest the heart nearest the mou'.
Nearest the kirk the furthest frae God.
Necessity has nae law.
Need makes virtue.
Ne'er rode ne'er fell.
New lords hae new laws.
Now's now, an' yule's in winter.

O' a' sorrow a fu' sorrow's best.
O' enough, men leave.
O' twa ills chuse the least.
O'er fast, o'er loose.
O'er meikle hameliness spoils good courtesy.
O'er meikle o' ae thing is good for naething.
Out o' debt out o' danger.

Pay him hame in his ain coin.
Pennyless souls may pine in purgatory.
Peter in, Paul's out.
Possession is eleven points o' the law

Pride finds nae cauld.
Pride will hae a fa'.
Put twa pennies in a purse an' they'll creep thegither.
Put your hand nae further than your sleeve will reach.

Rackless youth maks ruefu' eild.
Raise nae mae deils than ye're able to lay.
Raw dads mak fat lads.
Raw leather raxes.
Rich fowk hae routh o' freends.
Right wrangs no man.
Rome was na biggit in ae day.
Rot him awa wi' butter an' eggs.
Rule youth weel, an' eild will rule itsel'.

Saying gangs cheap.
Seeing's believing a' the world o'er.
Seeth stanes in butter, the broo will be gude.
Send you to the sea ye'll na get saut water.
Set a knave to grip a knave.
Shallow streams mak maist din.
Sic man sic master, sic priest sic offering.
Silence grips the mouse.
Silly bairns are eith to lear.
Slaw at meat, slaw at work.
Sma' fish are better than nae fish.
Smooth waters rin deep.
Soon gotten, soon spent.
Spilt ale is war than water.
Sudden friendship sure repentance.

Tak a pint an' 'gree, the law's costly.
Tell nae tales out o' the school.
The cure may be war than the disease.
The deil's a busy bishop in his own diocese.
The first sup o' a fat haggis is the bauldest.
The higher up the greater fa'.
The langest day will hae an end.
The mair haste the war speed.
The mair mischief the better sport.
The poor man pays for a'.
The thing that's done is na to do.
The weakest goes to the wall.
The wise mak jests, an' fools repeat them.
The worth o' a thing is best ken'd by the wan o't.
There is a measure in a' things.
There is mony a true tale tauld in jest.
There is skill in gruel making.
There's nae man sae deaf as he that winna hear.

There's naething ill said that's no ill ta'en.
They laugh ay that win.
Thistles are salad for asses.
Time tries a'.
Toom bags rattle.

Want o' wit is war than want o' wealth.
Wauken na sleeping dogs.
Weel is that weel does.
Were it na for hope the heart would break.
Whar the jug's broken let the sherds lie.
What's waur than ill luck.
What we first hear we best ken.
When a ewe's drowned she's dead.
When ae door steeks anither opens.
When friends meet hearts warm.
When the crow flees her tail follows.
When the ee sees na the heart rues na.
When you are weel haud yourself sae.
Wi' empty hand nae man shou'd hawks allure.
Wiles help weak folk.
Wilfu' waste maks waefu' want.
Wit in a poor man's head an' moss on a mountain avails nae-
Wonder lasts but nine days in a town. [thing.
Wood in wilderness an' strength in a fool.
Wrang has nae warrant.

Ye dinna ken whar a blessing may light.
Ye may gang farther an' fare war.
Your winning is na my tinsel.
Youth ne'er casts for peril.

FOREIGN PROVERBS.

Men learn to shave on the chin of a fool. *Fr.*
Travellers have the privilege of lying. *Fr.*
And empty purse and a new house make a man wise, but too late. *Port.*
A good bone does not always come to a good dog. *Fr.*
Hasty climbers have sudden falls. *Ital.*
Every bird thinks his own nest beautiful. *Fr.*
A close mouth catches no flies. *Old Fr.*
The lion is known by his paw. *Fr.*
Fortune favors the brave. *Span.*
Misfortune is good for something. *Fr.*
Capon comes to him who eats capon. *Fr.*
At a round table there is no dispute about place. *Ital.*
Old reckonings cause new disputes. *Fr.*
Keep at a good distance from horses' feet. *Lat.*
Acquire wickedly and spend foolishly. *Fr.*
Do not overdo what has already been done. *Lat.*
Keep adding to little, and you will soon have a good hoard. *Lat*
A fat kitchen, a lean will. *Ital.*
A great head and little brains. *Fr.*
Beware of him who has naught to lose. *Ital.*
Man proposes but God disposes. *Fr.*
The devil tempts every man, but the lazy man tempts the devil. *Ital.*
We must wait for the lame man. *Fr.*
One scabbed sheep will taint a whole flock. *Fr.*
A small loan makes a friend, a great one an enemy. *Ital.*
Anger is a brief insanity. *Lat.*
Adversity makes men, but prosperity makes monsters. *Fr.*
Allegory dwells in a transparent place. *Fr.*
Love and smoke cannot be hidden. *Fr.*
Money is a good servant but a bad master. *Fr.*
The art of conquering is that of despising death. *Fr.*
Hope is the dream of a man awake.
Truth is the daughter of time. *Ital.*
Long fasting spares no bread. *Frisian.*
Anger manages everything badly. *Lat.*
Great braggers little doers. *Span.*
Of two evils choose the less. *Span.*
In at one ear, out at the other. *Ital.*
When the steed is stolen the stable door shall be kept shut. *Sp.*
'Tis always fat in another man's platter. *Frisian.*

Save a thief from the gallows, and he'll be the first to cut your throat. *Ital.*
There is no fire without some smoke. *Span.*
When one is not thinking of it. the hare springs out. *Span.*
Fair promises gratify fools. *Fr.*
Where gold speaks every tongue is silent. *Ital.*
Soft words scald not the tongue. *Fr.*
It is better to have an egg to day than a hen to-morrow. *Ital.*
Better be the head of a sprat than a tail of a sturgeon. *Ital.*
Better bow than break *Ital.*
The blind man is a bad judge of colors. *Span.*
Money makes the man complete. *Span.*
Experience is the mistress of fools. *Lat.*
Keep your mouth shut and your eyes open if you would be happy. *Fr.*
A galled horse will not endure the comb. *Fr.*
What will be will be. *Ital.*
He who sups well sleeps well. *Ital.*
He who buys hath need of a hundred eyes; he who sells hath enough of one. *Ital.*
That which comes of a cat will catch mice. *Ital.*
A good neighbor a good morrow. *Ital.*
He who is silent confesses. *Ital.*
Pleasing ware is half sold. *Fr.*
He is my uncle who wishes my good. *Ital.*
To eat and to scratch a man need but begin. *Span.*
Have but few friends though many acquaintances. *Span.*
Care's no cure. *Port.*
Short pleasure, long lament. *Fr.*
A foolish judge passes a hasty sentence. *Fr.*
Between the hand and the mouth the soup often falls. *Fr.*
Dishonestly came the lamb, and dishonestly goes the skin. *Fr.*
From a bad crow a bad egg. *Fr.*
New lord, new laws. *Fr.*
He who will eat the nut must crack it. *Frisian.*
Steadiness is the foundation of all virtues. *Lat.*
Beauty and folly often join company. *Fr.*
The cat well knows whose lips she licks. *Port.*
Welcome, mischief, if thou comest alone. *Span.*
Fields have eyes and woods have ears. *Fr.*
A good lawyer is a bad neighbor. *Fr.*
A good bargain draws the money from the purse. *Fr.*
A good beast gets heated at eating. *Fr.*
The ox when weariest treads heaviest. *Lat.*
An old ox makes a straight furrow. *Span.*
Every cock is proud on his own dunghill. *Span.*
Every Jack must have his Jill. *Port.*
Every one in his own house, and God in all of them. *Span.*
The wearer knows best where the shoe pinches him. *Span.*
The scalded dog fears hot water and afterwards cold.
If the old dog barks he gives counsel. *Ital.*

Tis folly to be gaping near an oven. *Fr.*
The statelier the tower, the heavier the crash. *Lat.*
Persons who talk much say nothing. *Lat.*
Every one must go to the mill with his own sack. *Fr.*
She who is born handsome is born married. *Ital.*
After rain comes fine weather. *Fr.*
After losing one loses more. *Fr.*
An eagle does not feed on flies. *Ital.*
Teach an eagle to fly and a dolphin to swim. *Lat.*
When the tree is down, anybody can pick up the wood. *Lat.*
The beginning is half of the whole. *Gr.*
He dances well to whom Fortune pipes. *Ital.*
When the fox is asleep nothing falls into his mouth. *Old Fr.*
Among the blind, the one-eyed are kings. *Fr.*
Deferred is not rejected. *Germ.*
To day a king, to-morrow nothing. *Fr.*
An ape is an ape though clothed in silk or scarlet. *Span.*
A calf dies as soon as a cow. *Fr.*
So many men, so many minds. *Fr.*
The miser does nothing right except when he dies. *Lat.*
After boasting of their wine they sell us vinegar. *Span.*
The dog is worth his food. *Gr.*
When the mountains bring forth the waters dance.
A washed beard is half shaved. *Ital.*
Good bye, basket, the grapes are gathered. *Fr.*
The rich never have to seek for relations *Ital.*
Help thyself and Heaven will help thee. *Fr.*
Pull a fig for your friend and a peach for your enemy. *Ital.*
We know a bird by its song and a man by his words. *Ital.*
A mill and a woman are always in want of something. *Ital.*
All men's friend is all men's fool. *Frisian.*
Friendship is often profitable, love often injurious. *Lat.*
Love does much, money does everything. *Fr.*
Nurses' bread is sweeter than mothers' cake. *Frisian.*
When a man is in difficulties his friends keep aloof. *Gr.*
Subdue your passion or it will subdue you. *Lat.*
An old fox is not caught in a trap. *Lat.*
Do not triumph before you have gained the victory. *Lat.*
When a woman is openly bad, she is then at the best. *Lat.*
A cough indicates the embarrassment of a singer. *Gr.*
After death the doctor. *Fr.*
A bow too much bent is soon broken. *Lat.*
Rich are those who have friends. *Span.*
After me will come the deluge. *Fr.*
L[illegible] *Lat.*
[illegible] but money marriaging. *Fr.*
[illegible] the faults of a friend you betray your
[illegible] his tongue, be you first silent. *Lat.*
[illegible] rat. *Fr.*
[illegible] must have shameful nay. *Fr.*

God tempers the wind to the shorn lamb. *Fr.*
Hungry dogs will eat dirty puddings. *Fr.*
The absent one will not be heir. *Lat.*
Suspicion is strong on the suffering side. *Lat.*
At the end of the game one may see who hath won. *Ital.*
A friend is discovered in a doubtful matter. *Lat.*
Continual dropping wears away a stone. *Lat.*
Either a ship or a fur cap. *Lat.*
Fine words don't feed cats. *Ital.*
A honey tongue a heart of gall. *Port.*
A morsel eaten gains no friend. *Span.*
'Tis good to have a friend in court, for it shortens the process *Fr.*
A good day, a good work. *Fr.*
A good country, a bad way. *Fr.*
A good poet, a bad man. *Fr.*
While the grass grows the horse starves. *Ital.*
A running horse is an open sepulchre. *Ital.*
Don't spur a free horse. *Ital.*
He that loseth his wife and a farthing, hath a great loss of the farthing. *Ital.*
The man who has offended you will never forgive you, *Ital.*
From small we come to great. *Fr.*
Take a vine of a good soil and the daughter of a good mother. *Ital.*
Of young men die many, of old men escape not any. *Ital.*
Two eyes see better than one. *Fr.*
One may learn even from an enemy. *Lat.*
Every man looks more or less like a beast. *Fr.*
Every man has his own hobby, *Fr.*
He who is sorry for having sinned is almost innocent. *Lat.*
Hard with hard never makes a good wall. *Ital.*
Fear the worst from an enraged author. *Fr.*
The poor man gains nought by an alliance with a powerful man. *Span.*
Lovers remember everything. *Lat.*
Every medal has its reverse. *Ital.*
Haste not, rest not. *Germ.*
The best is always cheapest. *Fr.*
Indolence is often taken for patience. *Fr.*
We may despise the world but we can't do without it, *Fr.*
Be his the palm who hath the conquest gained. *Lat.*
Poverty is no vice. *Fr.*
So many servants, so many enemies. *Lat.*
With patience bear a rival in thy love. *Lat.*
Don't embark without biscuit. *Fr.*

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No. 3.

FAMILIAR OBJECTS

"GOD HELPS THOSE WHO HELP THEMSELVES."

OF EVERYDAY LIFE.

PUBLISHED BY

THE CLEVELAND EDUCATIONAL BUREAU.

CLEVELAND, OHIO.

LEADER PRINT.

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"WHATSOEVER THY HAND FINDETH TO DO, DO IT WITH THY MIGHT."
—*Solomon.*

ORGANIZED BY

THE BUSINESS MEN FOR THEIR EMPLOYEES AND THE PEOPLE.

CLEVELAND, OHIO.
1882.

FAMILIAR OBJECTS.

A GREAT poet has told us that to "know that which around us lies in daily life is the prime wisdom," and all experience endorses the truth of the maxim. In the following pages a few prominent facts connected with some of the "FAMILIAR OBJECTS" with which we thus come into contact in the course of our every day life are briefly placed before the reader.

Let us glance first at some features of the Common NATURE which everywhere environs us.

The AIR is an elastic and invisible fluid surrounding the earth for a limited distance—generally stated at from forty to fifty miles. Air is composed of two gases, oxygen and nitrogen, in the proportion of twenty-three parts of the former to seventy-seven parts of the latter, by weight. The oxygen supports animal life and combustion—the office of nitrogen not having been clearly ascertained, except that it serves to dilute the oxygen. The air gets thinner, or more rarified, as it is farther from the surface of the earth. The atmosphere (or air) has weight, 100 cubic inches, at a temperature of 60°, weighing 310,117 grains; its pressure being equal to 14½ lbs. to the square inch. The pressure of the air upon the human body at the surface of the earth is estimated at no less than fifteen tons. In climbing a high mountain, or making a balloon ascent, the atmospheric pressure becomes lessened as the traveler rises, and very unpleasant sensations sometimes result. Air also contains about one part of carbonic acid in 10,000 parts; this being a gas very destructive to animal life, the quantity found in pure air is very small. As, however, the oxygen of the air is appropriated by men and animals during respiration, and carbonic acid gas given off by their lungs in its place the necessity of good ventilation is evident.

MOISTURE in the atmosphere is sustained in a state of vapor by the influence of the sun's heat, and the greater the heat in any given portion of the atmosphere the larger the quantity of moisture which can be sustained; thus, at the torrid zone, the air contains more moisture than in other regions, although it does not appear visible in the form of clouds, because completely vaporized by the heat. Towards either Pole the quantity of vapor in the atmosphere gradually lessens. When vapor is partially condensed into water by cold air, it becomes visible (like the condensed steam from an engine or kettle) and forms clouds, more or less heavy, according to the amount of vapor and degree of cold.

RAIN is caused by the meeting or intermingling of two large masses of air at different temperatures. The warmer mass, losing part of its heat by contact with that which is colder, is not able to sustain the moisture which it has hitherto held in a state of vapor, and permits it to form into rain-drops, which descend by their weight. Some portions of the globe are rainless, as the Desert of Gobi in the Old World, and some districts of Peru. Rain-fall in Cleveland, for the year 1881, was 34.96 inches. Greatest rain-fall during past *decade*, 1878, was 53.51 inches. Smallest rain-fall, 1871, 30.03 inches.

HIGHEST TEMPERATURE in Cleveland for last decade, 1881, was 98-7°; lowest, 18° below zero in 1873.

OUR LATITUDE is 41° 30′; the LONGITUDE is 81° 47′ west from Greenwich.

POPULATION OF CLEVELAND, 185,851.

SNOW.—Snow is the condensed vapor contained in the air when frozen to a certain extent. When the moisture in the atmosphere has accumulated to saturation (or more than the air can uphold) and the temperature of the atmosphere at the same time is below freezing point, the moisture becomes crystalized in the form of snow and precipitated to the ground. When examined through a microscope these crystals are found to have beautiful star-like or otherwise symmetrical forms. Sleet is snow which has passed through a bed or layer of warmer air in its passage down, and becomes partially melted. HAIL.—Hail differs from snow, in being completely instead of partially frozen; it is condensed moisture which in its descent has encountered a deep layer of cold air, which has been able to effectually congeal the rain-drops.

DEW is the warm vapor of the air, condensed by contact with the earth, which during night-time cools more rapidly than the air. As the earth parts with its heat by radiation most readily during the night when the sky is cloudless, it is during such nights that dew is mainly deposited. Dew is usually found most plentifully upon substances, which radiate or part with their heat most freely, such as grass, wood, leaves of plants, especially if woolly; on the other hand, it is deposited in a much less degree upon bad radiators of heat, as smooth stones, polished metal, woollen cloth, &c.

HEAT.—Heat is that agreeable sensation opposed to its deprivation which we term "cold," which is felt when a certain invisible stream of caloric from whatever proceeding, comes into contact with our frames. This coloric may come from various sources, as, for example, the sun, the electric fluid, chemical action (as in the case of fire) or mechanical action (as the friction of an ungreased axle of a wheel). Heat expands solids. Thus a bar of iron becomes longer when heated to redness. Heat converts liquids into gas or vapor, thus water becomes steam.

With us the ordinary degrees of heat are measured by the thermometer known as Fahrenheit's, on the scale of which the melting point of ice, or the freezing point of water (which is the same thing), is marked at 32° thirty-two degrees). Very high degrees of heat are measured by the *pyrometer*, which affords an easy and accurate scale of the effects of

caloric on different substances. Thus with regard to metals, tin melts at 442°, lead at 594°, antimony at 900°, zinc at 773°, copper at 1,996°, silver at 1,873°, brass at 1,896,° gold at 2,016°, and cast iron at 2,786°. The greatest cold observed in England, Dec. 25, 1860, was 13.8° of Fahrenheit; proof spirit freezes at 7°, wines (strong) at 20°, sea water at 28·5°, and milk at 30°; human or vital heat is 98°, water boils at 212°, and linseed oil at 600°.

THE TIDES.—Twice daily the water on the sea coast or in a tidal river is "high," and twice it is "low." These well-known alternations are due to the attractive force of the moon, which raises the entire body of the sea's water on the side of the globe nearest to her into a great heap, or tidal wave, which, as the earth makes its daily revolution, follows the moon, and therefore passes every coast once in twenty-four hours, giving *one* high-water. But the fact of this heaping-up of water occurring on one side of the globe leads to a similar accumulation on the opposite side to balance it. This second tidal wave, divided from the first by the earth's diameter, also visits every coast once during the twenty-four hours, and makes the *second* high tide. Midway between these accumulations or water are two portions of the ocean more depressed than elsewhere. As these diurnally visit each coast, two periods of "low" water or "ebb" are found. Thus at every place there are two high tides in every *lunar* day at an interval of about twelve hours twenty-five minutes, and two ebb tides in the same period, at the same interval, and about six and a quarter hours after the high tides. At full moon (when the sun is on the opposite side of the earth) and at new moon (when the sun and moon are on the same side of the earth) the sun's attraction is added to the moon, and raises a higher wave than usual, called a "spring" tide.

SOUND is produced by the vibrations of any sonorous body, which, being transmitted to the air, put the latter into wave-like motion, and are thus carried to the ear. We speak of the air as the medium of transmission because it usually is so; but the sonorous vibrations can travel along other substances also. The speed of the transmission of sound at the freezing point of water is 1,090 feet per second, and about one foot more for every degree above. Heavy gas transmits sound slowly, and light gases faster than air; carbonic acid, 858 feet; hydrogen, 4,164 feet per second. Water transmits sound at about the same velocity as hydrogen. Metals vary much in their rate of transmission, from lead at 4,000 feet per second to steel at 16,000 feet. Depth or sharpness of musical sounds depend upon the number of vibrations per second by which they are produced. The lowest tone used in music is produced by an organ-pipe nearly 32 feet long, which gives a sound-wave equal to its own length. As sound travels at the rate of 1,090 feet per second, it must pass through a 32-feet pipe in nearly the thirty-second part of a second, and thus produce 32 sound-waves in each such interval. The note produced is called C, or *Do*. If the organ-pipe be only half the length (16 feet), it will produce 64 sound-waves per second, and give a note, also called C, just one octave, or seven notes, above the 32-feet tone. Reduce the pipe to 8 feet, and the vibrations are doubled, the 128 waves produced

giving a C, or *Do* an octave higher than the last. Similarly, a 4 feet pipe yields 256 waves per second; 2 feet, 512; 1 foot, 1,024; 6 inches, 2,048; 3 inches, 4,096; and 1½ inch, 8,192 waves, the sound produced being in each case an octave higher than that given by the preceding pipe. Sounds produced by stringed instruments obey similar laws.

AGRICULTURE probably had its origin in Egypt, the paintings on whose temple walls show us the husbandmen of 4,000 years ago employed in the various processes required for cultivation on the banks of the Nile. It is probable that the art was practised at least as early in China. Chaldæa and Greece followed, and in Rome husbandry was held in the highest esteem. WHEAT is perhaps the most important of the cereals (so called from Ceres, the Roman goddess presiding over agriculture). The Chinese attribute its introduction to the emperor Ching-Noung, about 2000 B.C. Wheat (*triticum*) grows wild in Asia, and on the African shores of the Mediterranean. It is supposed to have been introduced into Britain in the sixth century. The earliest importations of wheat into England appear to have been about the year 1350, BARLEY is the most widely distributed and used of any grain. Pliny says that it was first used for the sustenance of man The native country of barley is doubtful, as it is found apparently wild at far distant places, as, for example, Sicily, Asia, and North America There are several varieties. Barley produces in Great Britain from 28 to 40 bushels per acre, weighing about 52lbs. per bushel. Pearl barley is barley from which the outer covering has been removed, and the grains rounded in a mill. OATS (*avena*) have been long naturalized in Britain. There are two varieties, of which that known as the Tartarian is the best. RYE has never met much acceptance in England as a cereal, but is largely used for bread in Northern Europe. It suffers from the drawback of being subject to a fungous disease, which renders it poisonous. RICE forms the staple food of one half the human race. A warm climate and facilities for laying the field under water during the early growth of the plant are indispensable. The best rice comes from Patna and Southern India. MAIZE, or INDIAN CORN, is a North American product, as its name indicates. In this country it is extensively used as a green vegetable. The celebrated William Cobbett labored indefatigably to introduce its culture into England, but with little success. FLAX—One of the earliest cultivated of useful plants; mentioned in Exodus, and by Isaiah and Pliny. Flax mummy-cloths found in ancient Egyptian tombs 4,000 years old are finer than our present thread. Flax is botanically termed "linum," from the Keltic word "lin," thread—hence our "linen," manufactured from the fibres of flax bark. Flax is probably a native British plant. Attempts made in England to manufacture thread from flax fibres early in the 18th century; first achieved by the Countess of Moira, 1775. Linseed is made from the seed of the flax. HEMP (*Cannabis sativa*), a stout, free-growing plant, with dark-green foliage, yields from its stalk fibers which are the material of ropes, sacks, and the coarser-woven textile fabrics. COTTON is a kind of vegetable wool, the product of an American and Indian shrub, called botanically the *gossypium*. The cotton forms the lining of the pod in which the seeds

rest. Indian cotton cloth is mentioned by Herodotus, was known in Arabia in the time of Mahomet, and is supposed to have been brought to Europe by his followers. Cotton was grown and manufactured in Spain in the tenth century. Calico is so called from the Indian town of Calicut, whence the first was imported.

THE VEGETABLE KINGDOM supplies by its various products nearly all the substances required for food, clothing, or other wants by unsophisticated man. For food, what a rich variety it yields; for raiment, flax, hemp, and cotton; for architectural purposes, an abundant choice of timber. Let us first glance at some of the sources of the latter. The OAK (*quercus*) is unquestionably a native of Britain, as we learn from the Romans they found it in high esteem amongst the natives on their arrival. There are two British species, one of which has stalked leaves and stalkless acorns, and the other of which has stalkless (or nearly so) leaves, and acorns borne on stalks. The ELM (*ulmus*) is also in all probability an indigenous tree. Less useful than the oak as a timber tree, the wood of the elm is yet in great demand. It bears *dampness* better than most timber. The BEECH (*fagus*), a common tree in the north temperate zone. Beech forests seem to have been abundant in ancient Britain. The beech does not begin to bear fruit until fifty years, and lives about 250 years. The timber is used by the cabinet makers and coach builders, and the nuts of the beech (known as "mast") serve to fatten swine. Oil is also procured from the nuts. The ALDER (*alnus*). —This tree is usually found in moist localities, as swampy grounds or river banks. The wood of the common alder is much used for mill wheels, and other work which is usually under water; also for turnery and cabinet making. The bark is used in tanning and dyeing, and alder charcoal is highly esteemed as an ingredient of gunpowder The ASH (*fraxinus*, Latin, from Greek word meaning "separation," because the wood of the ash splits easily), a forest tree, whose wood is much empoyed by wheel-wrights, coach makers, and ship builders.

The BIRCH.—The common white BIRCH is plentiful in Great Britain and the United States, of which it is probably a native. Its wood is used in cabinet making, principally for common chairs, and the small branches are made up into cheap brooms. In Northern Europe the bark is used for ropes, and the Finlanders make a tea from the leaves.

Amongst FRUITS we have now the products of both hemispheres brought to our very doors. First among fruits we may justly allow is

The VINE.—Planted by Noah 2347 B.C. (Genesis ix. 20). Phocean Greeks settled at Marseilles about 600 B.C., and introduced vine-growing. The vine was carried into Champagne and Germany by the Emperor Probus, about 279 A.D. First planted at Madeira in 1420. The vine fungus disease (*oidium*) first noticed at Versailles in 1847. The grape insect (*phylloxera*) first observed in France in 1865. The APPLE.—The wild crab apple (*Pyrus mulus*) is probably a native of Great Britain, but many garden varieties are imported. Harris, fruiterer to Henry VIII., is said to have introduced some, and Lord Scudamore planted many Herefordshire orchards in the time of Charles I. The PEAR is also an importation from the East in its garden varieties. There is, however, a native

pear (*Pyrus communis*), although its fruit is of little account. PLUMS.—Most of the choice garden plums were brought from Italy and Flanders early in the sixteenth century. The date plum was brought from Barbary before 1596, the Pishamin plum from America before 1629. The STRAWBERRY.—The small, wild species is a native. The Flanders Strawberry was brought to England from the Low Countries about 1530, and the Oriental kind from the Levant about 1724. The *Hautbois* is of French extraction, as its name indicates. The RASPBERRY.—The introduction of this fruit is doubtful. The Virginian raspberry was brought to England before 1696. The MULBERRY comes from the East and the Levant. Those in the garden of Sion House, Isleworth, are alleged to be the first planted in England. CURRANTS are supposed to have been brought to Britaln from the Levant about 1533. They are probably called after the Greek city of Corinth. GOOSEBERRIES are also an imported fruit, and were presumably brought from Flanders before 1540. Few common fruits have had more attention bestowed upon it. In Lancashire varieties are raised which yield immense berries. The FIG is a native of Palestine, a great part of Asia, and the south of Europe. From the latter locality it was introduced to England before 1548. The DATE.—The fruit of one of the most common Eastern trees, which grows to a height of from fifty to one hundred feet; the crop is very regular and heavy. A date tree will produce 300lbs. of dates per annum for more than half a century. The PINE APPLE is a native of tropical regions, and can only be grown under glass elsewhere. The fruit was introduced from the Brazils about 1568. The MELON was known in England before 1640, and is raised in America in great abundance. BANANA.—The Banana, very common in our markets, is the most important of tropical fruits, and the varieties are very widely diffused, being found in both the East and West Indies, Africa, South America, Mexico, and the Pacific Islands. Bananas are eaten raw when fully ripe, or sliced with sugar and cream, or used in pastry. An area of land which would only grow wheat enough to feed one man, would produce sufficient bananas for the sustenance of twenty-five; the bunches of bananas sometimes weigh 100lbs. The ORANGE was known in England before 1596. LEMONS.—Lemons were brought to England from Spain about 1554. The larger species, called Portugal *limes*, about the same time, but the larger American limes not until the middle of the eighteenth century. HAZEL NUTS are natives of Great Britain, but FILBERTS are an introduced variety. The common black WALNUT is a native of North America, but was naturalized in Europe before 1629. So largely grown on the Continent that it furnishes stocks for rifles. ALMOND.—The common almond is a native of Barbary, but has long been naturalized in Europe. There are two varieties, the sweet and the bitter, both produced in large quantities by the almond trees. The Jordan almonds are brought from Malaga, in Spain. The almond tree was introduced into England about three hundred years ago. The bitter almond contains hydrocyanic, or prussic acid, and distilled water of bitter almonds is highly poisonous.

FOOD. At our breakfast-table we find first, the "staff of life," known and used from the earliest ages, and claimed by the Chinese to have been invented by Ching-Noung about two thousand years before the Christian era. Leaving dubious tradition, we find that the breaking of BREAD was known to the early inhabitants of Canaan (Exodus xii. 15) and also to the Egyptians. Baking became a profession in Rome 170 B.C. Remains of Roman loaves from Pompeii have been found. Ancient bread was raised by "leaven," or a part of the former dough left till the fermentation had began. Yeast, which is a vegetable fungus, is known to have been used by English bakers in 1634. "Aerated" bread is made by passing carbonic acid gas through the dough, and was patented in 1857. In the time of James I. barley bread was used by the poor, and the use of rye bread is still common on the Continent. Wheat flour consists largely of starch, and hence supplies a "heat-forming" food to the human body. It also contains about 5 per cent. of sugar; likewise a "heat-former," according to the theory of Baron Liebig. The nutritive matter in wheat flour is stated by Dr. Lankester at 13 per cent. Bread made of whole meal would appear to be the most wholesome, as Majendie found that animals died in a few weeks when fed solely on fine flour, but lived long on whole meal. BUTTER appears to have had an Oriental origin, both the Egyptians and Jews having been acquainted with the method of making it at an early date. Jaal brought out butter to the fugitive king. But the Greeks had no early knowledge of it, though later the Greek historian, Herodotus, related the process by which the Tartars made butter from the milk of their mares. Our ancient Teutonic ancestors were butter-makers, but the Romans never used it. It has been made in England from remote antiquity, probably since the days of the ancient Britons. Butter exists in cow's or other milk in the form of microscopic globules. These globules vary in cow's milk from $\frac{1}{12000}$ to $\frac{1}{8000}$ of an inch in diameter. Being the lightest part of the milk, they rise to the surface, are skimmed off as "cream," and submitted to the agitation of some kind of churn. Milk generally gives about 10 per cent. of cream, and cream yields about 45 per cent. of butter. Leaving the other foods common to breakfast and some other meals, let us turn to the beverages appropriate to the morning meal. Here we are favored above our ancestors. They had but water, beer, wine, or mead; but for us "the cup which cheers but not inebriates" and the infusion of the "Arabian berry" are poured out by fair hands. TEA was utterly unknown to the polished nations of antiquity. That its culture originated in China there is no doubt, but we do not know the date. Indeed, there is obscurity about even the time of its introduction to Europe, although this was probably done by the Portuguese about 1577. It was sold in England prior to 1658, but was scarce and worth from $30 to $50 per lb. The East India Company first imported it in 1669. Green tea began to be used about 1715. The tea-plant is an evergreen shrub, native to China, and belongs to the same order as the camellia. The leaves are picked, sorted, dried, and made into green or black tea by different processes. The most active principle contained in tea is *theine*, which acts as a sedative on most people's nervous system. COFFEE was introduced into Europe about the same

time as tea, but came from quite another direction. The coffee berry is the fruit of an evergreen shrub or small tree, which still grows in a wild state in Abyssinia. It was used as an article of diet in Persia as early as the ninth century; thence passed to Arabia, where its decoction became popular. The Dutch brought it to Holland about 1616, and it is supposed to have been first sold in London about 1652. The first coffee-house in England was opened by a Jew at Oxford in 1650. The essential principle of coffee—termed *caffeine*—is identical with that of tea, and its effects upon the nervous system are similar. In this connection, we may allude to CHICORY, much used for mixing with coffee. This is made from the roasted roots of an English plant known to botanists as the *Cichorium intybus*, which bears bright blue flowers resembling those of the endive. Chicory does not contain either theine or caffeine, but has a bitter principle whose flavor some people like. COCOA is the seed of the cocoa-tree of the West Indies; first introduced into England from Spain about 1650. Trees grow fifty feet in height with leaves twelve feet long, and yield, beside the seeds, good timber and an oil much used in the East for lamps. CHOCOLATE came into use soon after. Chocolate is made from the cacao seed, roasted, powdered, perfumed, and formed into cakes. Our tea or coffee we sweeten with SUGAR, the product of sugar-cane (*Saccharum officinarum*). This plant is supposed to have been known to the ancient Jews, and was met with in the East Indies by one of Alexander the Great's generals in 325 B.C. The Romans used it as a medicine. The cane appears to have been brought to Sicily about 1138, and sugar itself probably made its appearance in England prior to the reign of Henry VIII. Previous to that time, honey had been employed for sweetening pastry, etc. Sugar, like starch, is a "heat-former" as an article of diet. Sugar is yielded by other vegetable productions beside cane. Much is made in France from the root of the white beet. In North America the sap of the Sugar Maple is boiled down; and the Chinese use a cane called the "Sugar Sorgho."

CONDIMENTS of various kinds appear to be almost a necessity of man's diet. Even the animals seem to share this feeling, for deer will travel many miles in North America to a "salt lick," and a lump of rock-salt is usually kept in every country cowhouse. Salt is perhaps more than a mere condiment; still it will be convenient to so rank it here.

SALT meets us in the oldest traditions and records, and so great was its importance that it was accepted amongst Orientals as a solemn type of hospitality. Salt is obtained from two sources—either from mines, as the famous Polish mines of Wielitzka, which have been in existence at least 600 years, also as the Austrian mines at Salzburg; or from salt water by evaporation, as at Syracuse, N. Y., Michigan and West Virginia. The salt works of Cheshire, England, called the "Wiches," date back to the Heptarchy. The salt mines of Staffordshire were discovered about 1670. MUSTARD that biting but pleasant accompaniment to a sirloin, is made from the ground seeds of the mustard plant (*Sinapis*), a native of England, and belonging to the order of cross-shaped flowers like the cabbage and turnip. Mustard, horse-radish, water-cresses, &c.,

all derive their bitter flavor from the existence of a powerful chemical compound called cynapon which is found in them. Mustard forms an excellent emetic in case of accidental poisoning. The PEPPERS, both black and white, are made from the seeds of a plant termed botanically the *Piper nigrum*. The "black pepper" is made from the dried seeds ground with their black outer skin; the "white pepper" is got from similar seeds from which the dark husk has been removed. CAYENNE PEPPER consists of the dried and powdered fruits of two kinds of capsicum pods. Both the capsicums belong to the same family of plants that yields the potato, deadly nightshade, henbane. Other condiments are more usually known as "spices." Amongst these are the following: —CINNAMON, which is the bark of the cinnamon laurel, of the East Indies; more than 20,000 lbs. are consumed annually in Great Britain. The CLOVE is the unopened flower of a kind of myrtle—the *Caryophyllus aromaticus*—and is an article of import to the extent of over 200,000 lbs. yearly. ALLSPICE is the berry of the West Indian pimento tree; it has been named "allspice" from its composite flavor. The NUTMEG is the fruit of a kind of laurel, the *Myristica moschata*. Outside the nutmeg seed grows a peculiar organ, called by botanists an "arillus," and this, when detached, becomes the MACE of the grocers. Both nutmegs and mace contain a pleasant aromatic oil. They come from tropical countries, as Java, Borneo and Jamaica, but especially the Molucca Islands. GINGER is the root stalk of the *Zinziber officinale*, a native of Hindostan, but largely grown in both the East and West Indies. The delicate flavoring known as VANILLA is the product of the fruit of a kind of orchid—the *Vanilla aromatica*—found by Cortez in use amongst the Mexicans upon his arrival. Vanilla is much used for flavoring chocolate.

A variety of plants yield condiments or flavorings. Amongst these are the HORSERADISH; a number of MINTS, which owe their pleasant properties to the volatile oil contained in the tiny receptacles in their leaves; SAGE. THYME, and many other "pot herbs," likewise dependent for their repute upon the secretion of fragrant essential oils; the common MUSHROOM (*Agaricus compestris*), well known to most people; the MORELL (*Morchella esculenta*), a curious fungus, with a wrinkled top, and highly valued as a flavor; the TRUFFLE (*Lycoderdon tuber*), another fungus, still more rare, presents much the appearance of the ordinary Jerusalem artichoke. SAMPHIRE, which is the stalk or rather entire plant of the *Crithmum maritimum*, a singular denizen of our salt marshes, &c.

DRINKS embrace a wide variety, from the pure element up to the elaborate concoctions of the punch-maker, or the mare's milk affected by the Tartars, to the nauseous chalybeate spring sought by the sick man.

WINE.—We read that so early as 2347 B.C. "Noah planted a vineyard, and drank of the wine," and Ching-Noung, Emperor of China, is said to have made rice wine about 1998 B.C. The grape vine (*Vitis vinifera*) appears to be a native of the shores of the Caspian; and is found wild not only over the East, but in France, Germany, Portugal, and Italy.

Probably the Romans brought it to Britain. Bede informs us that there were vineyards in England in 731 A.D. The vine grows from 55° North latitude to the equator, and in Europe to an elevation of 1,000 ft. in Germany to 5,000 in Sicily. The berries are red or white, and the wines made therefrom, usually follow the same colors. Amongst the red wine are port, the French clarets and burgundy, and many of the Rhine wines. Amongst white wines are sherry, champagnes, hock, Johannisberg and the scarce Hungarian wines. Port, Sherry, Madeira, and Marsala contain most alcohol, and Moselle and Claret least. Effervescing wines owe their qualities to the carbonic acid which they contain. ALCOHOL (an Arabic word, the Saracens being celebrated for their early practice of chemistry). Alcohol is the spirituous part of fermented liquors, varying in flavor with the substance fermented. Thus grape juice yields brandy; sugar cane, rum; barley, whiskey, gin and spirits of wine. The rectified spirits of wine of the London Pharmaco pœia contains 82 parts alcohol and 18 parts water. "Proof spirits" is usually understood to mean a mixture of equal parts of alcohol and water. BEER.—Ale was known as a beverage as early as 400 B.C. Herodotus ascribes its invention to the goddess Isis. The Greeks and Romans probably learned the art from the Egyptians. Ale was known to our Saxon ancestors. Under the early Norman kings none but freemen were allowed to sell it. Hops were introduced in England in the 15th century. In malting, the gluten and starch of the barley are converted into sugar and gum, the former of which becomes changed into alcohol in brewing. CIDER and PERRY.—The former takes its name from the German word *zider*. When first made in England, about 1284, it was called apple-wine. It is largely made in the west of England, and in Normandy. Perry, the wine of pears, is in use in Switzerland. Both contain a considerable portion of alcohol, and depend for their pleasant flavoring upon the presence of malic acid. MEAD, or *metheglin*, is an ancient British drink, still popular in parts of England. It is made of honey and water, fermented in a similar manner to wine.

THE DOMESTIC ANIMALS found in England are generally either native or were acclimatized at a very distant period. Some at one time considered as semi-domesticated can now hardly be reckoned in the list. Such are the falcons and other hawks used in the ancient sport of falconry. The elephant, the cheetah, or Indian hunting leopard, as a substitute for the dog, and the Peruvian llama, or alpaca goat are also utilized.

The OX, the SHEEP, the PIG, and the GOAT are probably natives of Britain. The HORSE must have been introduced very early from the East, though Gaul and Cæsar found them in the possession of the Britons. The DOG was also amongst the animals of the ancient Celtic races whom the Romans found here. The ASS was, perhaps, brought from the East by the Crusaders. CATS and RABBITS are native in their wild state. The GUINEA-PIG is a native of Brazil. SQUIRRELS are found in most countries. The DOMESTIC FOWLS came from Asia; English GEESE and DUCKS are improved on native wild breeds. The TURKEY was brought to Europe from North America by the Spaniards about 1525; the GUINEA

FOWL comes from Africa; both PEAFOWL and PHEASANT are of Asiatic parentage. The RED-LEGGED PARTRIDGE came from France in the last century. COCHIN-CHINA fowls were brought from the country whose name they bear a few years since. The DOVE and WOOD-PIGEON are natives of England, but many fancy varieties have been importations. The PARROT, COCKATOO, and PARA-KEET come from South America mainly. The CANARY from the Islands of that name, and the LOVE-BIRD is a native of America. SILK-WORMS come from China. The yellow LIGURIAN BEE, now often seen, was first brought from Italy about twenty-five years ago.

ANIMAL SUBSTANCES are of great use to us. Let us glance at a few common things derived from our furred and feathered friends.

First, LEATHER, the hide of the horse, ox, sheep, goat, and various other animals thickened and made supple by certain courses of treatment known as tanning and currying. Our word "leather" comes from the old Saxon term *lither* "soft," "lithe." All nations from the earliest periods appear to have known how to preserve skins. Jews and Egyptians used leather for many purposes, including that of large vessels for containing wine. The Greeks, Romans, and Saracens also prepared leather. The ancient Britons could tan leather. There are two processes of tanning, by the first of which (viz., by the use of oak-bark) are prepared horse and ox-hides, both used for harness and shoes. The former come mainly from South America. Calf-skin, often brightly dyed, is used in book-binding and for ball-room shoes; sheep-skins are used for roan leather; goat-skins for morocco leather for book-binding and upholstering; seal-skins are used for bags, &c.; kid, buck, and doe skins are used for kid gloves. "White" and buff leather, such as house-maids' gloves, chamois (so called, which are really split sheep-skins), and whip thongs are prepared with alum, which process has been supposed to have been discovered by the Saracens. Russian leather used in book-binding, and is well known for its pleasant scent, the product either of birch bark or sandal-wood. Leather or oil cloth is unbleached cotton covered with boiled linseed oil and turpentine, and is an American invention. WOOL has been used in a spun and woven form from a very early period in the history of humanity. In the Bible we meet with allusions to woollen garments. Both the Greeks and Romans were expert in the manufacture of woollens, and during the Middle Ages England became especially famous for the excellence of her woollen goods, which were considered the staple of her foreign trade. In 1275 Edward I. imposed duties on exported wool. In 1331 the weaving of wool on an improved plan was introduced from Flanders by John Kempe. Wool is produced by sheep of all countries, but quality and quantity vary very much—the Welsh being the lowest, and the Australian sheep the highest. The fleeces are first washed, then the wool is "stapled," or assorted, according to length, &c.; next, if for black cloth, it is dyed, and subsequently "carded," spun into thread and woven into cloth. IVORY and BONE.—Ivory was brought to Solomon from Tarshish about 992 B.C. It was largely used by the Assyrians and Egyptians, and equally esteemed by the Greeks and Romans. The Chinese are extraordinary skilful workers of ivory.

The ivory in general use is from the tusks of the African and Indian elephants, but the hippopotamus and narwhal also furnish ivory. Knife handles, combs, pianoforte keys, billiard balls, and rules, are a few of the applications of ivory. *Vegetable Ivory*, which is often used as a substitute for the genuine article, is the flesh of a Peruvian nut. BONE, as more common, is even more useful than ivory. It is worked up into buttons, card cases, knife-handles, umbrella handles, brush backs, and an infinity of articles. The value of bones imported into the United Kingdom in 1877 was £741,899. The art of softening bone was discovered in 1688. Bone dust was discovered by Liebig in 1840 to be a valuable manure, and has been much used since. SILK is obtained from the cocoon spun by the caterpillar of the mulberry-tree moth (*Bombyx mori*), to which family also belong the largest insect known, the *Saturnia atlas*, which measures at times nine inches from tip to tip of its wings. The silk manufacture employs millions in the world at large. From China the culture of silk appears to have been brought to Hindostan, and then, in the reign of Justinian, to Europe. The ancient Greeks were acquainted with silk to some degree, it having been brought thither from Persia as early as 325 B.C., but was very rare. With the Romans it became an article of more common import. Heliogabalus, the Roman emperor, was the first to adopt silken garments. At that time silk was of the same value as gold, weight for weight.

ARCHITECTURE AND BUILDING.—Wood and clay were doubtless the first material used for this purpose. The *crannoges* and *lake dwellings* of the men who existed before the historic period were of wood. STONE and MARBLE were used in primitive times as architectural materials by the Egyptians, Indians, and the nations of Southeastern Europe. The Greeks employed freely the white marble of Pentelicus. Stone buildings were erected in England about 670. A stone bridge exists at Crowland, which is said to date from 860. Stone round towers of at least equal antiquity are found in Ireland, and a king of Connaught is said to have built a castle there in 1161. BRICK.—Tenacious clay made up into a long square form, and either baked or sun-dried. Bricks were very early used in architecture, as for instance at the building of Babel, "Let us make brick and burn them thoroughly" (Gen. xi. 3). The giant walls of Babylon were also of brick. Some Egyptian bricks, from the Pyramid of Howara, were found to contain chopped straw: "Ye shall no more give the people straw to make brick" (Exod. v. 7). These bricks measure 17½in. by 8¾in., and are 5½in. thick. Modern English bricks are 9in. by 4½in. and 4in. thick. American bricks usually are 8in. by 4in. and 2in. thick.

FURNITURE.—In our houses how many "common things" are there not which each holds a history—a history of the toils and struggles of our race after comfort, decency, and beauty? The primeval man needed little in his hut of rude branches or natural cave, save a bed of leaves and some means of procuring fire. Let us look at what we have now, and how we came by them. FIRE.—Who first discovered the culinary and heating properties of fire we do not know. The ancient poets told that it had been filched from heaven. Probably the heat engendered by

friction gave the first hint, and even to-day many savage tribes produce fire by rubbing two pieces of smooth wood together until one ignites. We know from the Egyptian wall paintings that wood was used for culinary and smelting purposes in the earliest recorded periods of the history of humanity. Stoves for heating baths were in use at Pompeii and Herculaneum in the first century before the Christian era; also bakers' ovens. Wood was the only fuel of the Middle Ages, both in our own and other countries. The first license to dig "sea-coal," as it was called, because brought to London by ships, is supposed to have been granted by Henry III. in 1234, at Newcastle-upon-Tyne. Coal was commonly burned in London in 1400; but not in general use until the reign of Charles I. (1625). Coal is thought to be the product of immense accumulations of vegetable matter during the early ages of the earth, which were subsequently submerged and covered by beds of sediment which formed other rocks. LIGHT (Natural and Artificial). The early means of admitting natural light into the rude dwellings of the primitive days was by an unsheltered opening. The Romans appear to have used horn and glass for windows, as these fragments of window-glass were found at Pompeii, which would give A.D. 79 for glazed windows. The present fashion was probably set by Benedict Biscop, about 650. Stow tells us that the glass manufacture was established in London in 1557. Stained glass was used in churches about 850. For artificial lights the most rude expedient was blazing strips of pine and other resinous woods. Metal lamps, in which perfumed oil was burned, were used by the Greeks and Romans. Our Alfred the Great is said to have invented the horn-lantern. The Romans had candles of fat and pitch. Splinters of greased wood were used in England about 1300, when tallow candles took their place. Wax candles were the most usual form of lighting in the Middle Ages. London streets were first lighted by oil lamps in 1681. Dr. Clayton obtained gas from coal 1739. Gas was first applied to lighting by Mr. Murdoch, in Cornwall in 1792, first used at Birmingham in 1789, first used in London at the Lyceum in 1803, and in London street-lighting in 1814. The most important principle in the electric light of to-day was discovered years ago by Sir Michael Faraday, but we all are greatly indebted for practical inventions to Brush, Siemens, and others.

USEFUL INVENTIONS OR DISCOVERIES.—Almost every age in the history of human progress has added its quota to the list of natural objects utilised by man, or engines which he has devised, for the mitigating of his labor or the increase of his pleasures. We will enumerate a few.

MINING.—Shallow mines in search of ores were made at a very remote epoch. The Egyptians practised mining, as did also the Greeks and Romans. Gold and copper mines in England mentioned in an Act, Henry III., 1262; Irish silver mines, 1276. The Cardiganshire lead mines were discovered in the reign of James I. Tin mines, supposed to have existed in Cornwall and the Scilly Isles some centuries before the Christian era. Henry III. is stated to have granted a license to dig coal at Newcastle-upon-Tyne, about 1234.

CHARCOAL.—Used as a smokeless fuel, also in the manufacture of gunpowder (which see). It is prepared by piling up billets of wood in a pit, until they reach a height of eight or nine feet. The pile is then set on fire below, and almost entirely banked over with earth, so that the combustion only chars the wood and does not consume it. Much charcoal is made in the German forests and in our own country. Charcoal for artists is from charred willow branches.

THE STEAM ENGINE.—The earliest steam engine is a toy described by Hero of Alexandria about 250 B.C. The Marquis of Worcester described a rude steam engine of his own invention, in his book published 1663. Thos. Newcomen is claimed to have made the "first self-acting steam engine," in 1712, and James Watt took out his first patent for a condensing engine, 1769. Trevithick's high-pressure engine was brought out in 1801: Fulton's first steam-boat in 1806; and steam power was first employed to carry coals on a railway by Blenkinsop, in 1811. Steam was applied to printing the London *Times* in 1814.

RAILWAYS.—Iron railway laid down near Sheffield, 1776; first iron railway sanctioned by Parliament, 1801; Trevithick's high-pressure locomotive engine, 1802; George Stephenson's first locomotive (16 miles per hour), 1814; Stephenson's "Rocket," (35 miles per hour), 1829; Liverpool and Manchester Railway opened, 1830. Present highest rate of speed about 70 miles per hour.

STEAM-PACKETS.—Fulton's first steam boat, mentioned above, was followed by one on the Hudson River in 1807. Bell's "Comet," sailed on the Clyde, 1812; the first steamboat on the Thames, 1815; first voyage of "Great Western," 1838; war steamers built, 1838; "Great Britain" sailed 1845; "Great Eastern" sailed 1860.

THE ELECTRIC TELEGRAPH.—The transmission of electricity by an insulated wire by Watson, 1747; Wheatstone's electro magnetic apparatus, with 4 miles of wire, 1836; the system patented by Cooke and Wheatstone, 1837; Cooke sets up line telegraph on Great Western Railway, 1841; submarine telegraph from Dover to Calais opened, 1851; completion of the Atlantic telegraph between England and America, 1858. Sir William Thompson says the Telephone is the marvel of marvels.

GUNPOWDER —Compound of sulphur, saltpetre, and charcoal. Invented by Roger Bacon, the monk, in the thirteenth century. Made for use in Spain in 1344, and in England in 1418.

IRON.—The ore from which iron is smelted is found in many parts of the United States, but of best quality in the Lake Superior District. Iron-ore is usually dug up in brownish rough nuggets of various sizes, which are first "roasted" to clear away some of the extraneous matter, and then melted in a fur nace. In these furnaces, which are thirty or more feet in height, a continual "blast" is kept up by steam apparatus, the ore is exposed to intense heat, and when molten, the iron is run into sand moulds, and formed into blocks termed "pigs." In this state metal is "cast" iron, is brittle, and when broken, the fracture exhibits the appearance of

a mass of large round grains. It is necessary, either by hammering or pressure, to compress these round grains into long fibres, and thus impart toughness to the metal; and this is effected at the present day by heating the "pig" to a white heat, and exposing it to repeated blows of a heavy steam-hammer, and passing it through grooved rollers, which reduce it to the form either of square or flat bars or round rods. In this state it is "malleable" iron, ready for the blacksmith.

The whole process of converting iron into Bessemer Steel is intensely interesting.

MONEY.—Coining money is of great antiquity, the invention thereof being attributed to the Lydians, of Asia Minor, about B.C. 400. Iron coins were used at Sparta in the third century of the Christian era, and silver and brass currency at Rome towards the end of the same century. In earlier days it is probable that ingots of the precious metals passed unminted, and by weight, as was the case with the shekel paid by Abraham to Ephron.

Probably there was a coined currency in use in Britain before the Roman invasion; but ring money was most common. Romans struck coin in Albion; Saxons made coins in copper and tin in the seventh century A.D.; Athelstan, 928, established unform coinage; Normans coined silver; gold coins were introduced by Edward III. in six shilling pieces, almost as large as our modern sovereign; a gold coin called the "noble" was subsequently struck, which was worth 6s. 8d., and became the usual fee to lawyers; pence and halfpence were struck by Edward I. (they were of silver); sovereigns were coined in 1494; shillings in 1504, and crowns and half-crowns in 1551; eopper coinage came in about 1620, and halfpence and farthings were introduced 1665; Charles II. first coined guineas 1663; half-guineas struck 1673; quarter guineas 1716; guineas were of the same size as sovereigns, but of gold of more carats; guineas passed for 21s., but at 1798 had risen to 30s.; gold seven-shilling pieces coined 1797; half-sovereigns 1816; silver florins 1850.

FIRE ENGINES.—Force pumps were known to the ancients, but the first fire-engine proper is said to have been made by San Vanderheide. about 1518. An improved form was used at Nuremberg, in 1657.

SOAP is of great antiquity, being mentioned by the Roman authors, Pliny and Galen, the former of whom ascribed the invention to the Gauls. First made in London in 1524.

FORKS.—First used in Italy about 1480. Introduced into France about one hundred years later, and into England about 1608.

BRIDGES.—The earliest bridges were simply trees thrown over streams. Stone bridges were probably introduced by the Romans. who were the first people to apply the arch to practical use. Some of the old Roman bridges remain. That of Alcantara, for example, is a magnificent specimen of Roman work. It consists of 6 arches spanning the Tagus, and is 670 Spanish feet in length, and 205 feet high from the bed of the river. The first stone bridge in England was at Bow in 1087. Of modern English bridges, London has 5 arches, the centre 152 feet high, the entire

length of the bridge being 930 feet, and its width 55; Waterloo is 1,239 feet long, and has 9 elliptical arches, the centre one with a span of 120 feet.

CANALS.—Primitive forms of canals were known to the ancients, but not the use of locks, whereby the head of water is retained. The first English navigable canal was made about 1134.

BRASS.—An alloy of copper and zinc in the proportion of six or eight ounces of zinc to a pound of copper. Brass was not in early use in the ancient world, its place being filled by bronze, which is compounded of copper and tin.

BELLS were known in the east at a very early date in the form of hand-bells and bells for apparel (Exodus xxviii. 33–4) and horse trappings. Polydore Virgil attributes use of church bells to Paulinus, Bishop of Nolan. Known in England in 6th century; Croyland Abbey had peal of seven about 980; Archbishop Kinsy gave two bells to the church of St. John, at Beverly, 1052.

ANCHORS.—The first anchors were probably weighty stones, but with the general use of iron came in anchors of hooked form of that metal. The form of anchor has undergone little modification since the time of Anacharsis, the Scythian philosopher, about 594 B.C. Before him, heavy single hooks had been used, but he added the second arm. Chinese anchors were, of old, and often still are, crooked pieces of heavy wood. Copper anchors are sometimes used in the South Sea Islands.

VELVET, formed of a "pile" of silk woven on a backing of flax or cotton, was first manufactured in Italy, from whence the art was carried to France, and subsequently to England. Velvet is mentioned by Joinville in 1272, and Richard II., in his will (1399) directs that his corpse be swathed in velvet.

COPPER.—It has been conjectured that copper was the first metal worked by man, and this is rendered the more probable by the early use of bronze (alloy of copper and tin) for both tools and weapons before the general adoption of iron. Pliny calls it one of the six primitive metals. Copper (translated "brass") is mentioned in several passages of the Bible. During the historic period, copper mines were discovered in 1561, and copper mining is extensively carried on in Cornwall. The great Australian Burra Burra mines were discovered in 1842. The Romans used copper money.

ARROWROOT is the name applied to starch obtained from a variety of different roots and grains, as the maranta, the manihot, tacca, arum, potato, &c. It was originally limited to the starch of the root of a maranta growing in the West Indies, which was thought to be a cure for the effects of poisoned arrows. Arrowroot forms an excellent diet for invalids, as its fattening properties counteract the emaciation of sickness.

CORK.—Bark of an oak (*Quercus suber*), native of Southern Europe and Northern Asia; tree first brought to England about 1690; the cork

falls from trees when 14 or 15 years old, if not previously stripped off. Cork is only about one-quarter the weight of water.

AMBER is a vegetable gum, probably exuded by fossil trees. It is found principally upon the shores of the Baltic. It often contains remains of insects. When rubbed it becomes powerfully electric.

CLOTH (WOOLLEN)).—Manufactured from the wool of the sheep. Manufacture known early, but first introduced into England in 1191, and first manufactured at Kendal in 1390.

CALICO.—So called from Calicut, a town of Hindostan; calico first brought to England by East India Company about 1631; calico printing employed by the Dutch 1676; the wearing of calico legally prohibited first quarter of 18th century; calico first made in Lancashire 1771.

BAIZE was first made at Colchester about 1680.

FAMILIAR OBJECTS OF RECENT INVENTION OR DISCOVERY are numerous. In our houses, our clothing, and our food, we find them, and more especially in the many comforts and refinements by which every class of society in the present day possesses such marked advantage over their predecessors.

To take, first, the important question of *Sanitation*, the efficient *drainage* of *London* was initiated only in 1855; by the appointment of the Metropolitan Board of Works. The *supply* of *pure water* by pipes was a more ancient improvement, for some parts of London were supplied through leaden pipes as early as 1239, and Hugh Middelton's great system of conveying the waters of the New River to the Metropolis was opened in 1613. This scheme has been the fertile parent of many others throughout the country. *Soap* was manufactured at London and Bristol in 1524, but it was not till 1846 that *baths* and *wash houses* for the people were established, and the *Turkish bath*, that relic of the grand vapor baths of the old Romans, was not introduced into this country from the East until 1860. Although *hospitals* were known to the ancients (witness that of Cæsarea, founded by the Emperor Valens, in 370), yet nearly all our existing magnificent houses for the sick have been erected during the last and the present century. The first *ventilator* appears to have been designed by the Rev. Dr. Hales, in 1740, and *disinfectants* of a chemical nature are the production of the last quarter of a century. The first drinking fountain in London was opened in 1859.

In architecture, at least as applied to grand structures, our ancestors left us but little room for improvement or novelty. Hence the cathedral or mansion of to-day is often but a faint reflex of the grander work of the men of old time. But in the ordinary dwellings of the people, our age has effected great improvements. The introduction of various cements has been of great utility. Plaster of Paris had been in use from the fourteenth century, but no external coatings for walls except mortar, was of general adoption in England until it was discovered that a waterproof cement could be prepared from various rocks. Portland cement, made from a siliceous lime-stone, was introduced about 1840. Asphalte,

a form of bitumen, known even as far back as the erection of Babel, whose builders used "slime" for mortar, was first used for pavements about 1844. Felted material, saturated with asphalte, as a roofing substance dates from about 1850. Although glass for casements was known in the time of the Plantagenets, the thick variety, termed "plate glass," was not made in England until 1773. Gas lighting in private houses did not become a "familiar object" until about 1850, and one of the strangest proofs of the difficulty with which it worked its way into popularity is shown by the fact that while coal gas was first used at Manchester, in 1805, the Haymarket Theatre, London, did not adopt it till 1853. or nearly half a ceutury. A formidable competitor with gas for humble houses is found in the varieties of mineral oils brought into use during the last twenty years. Mineral oil, like coal, is possibly the product of fossil vegetables, which rises to the earth when a perforation is made down to the stratum containing it. Mineral oil was known so far back as the days of the Greek geographer Strabo, but its practical utilization is only of very recent date. Oil springs were first discovered in America in 1863, and the supply—under the various names of petroleum, paraffine, kerosine, &c.—appears to be practically inexhaustible. The employment of electricity as a means of lighting was first practically experimented upon about 1844, but it was not until Professor Jablochkoff, of St. Petersburgh, brought out his "*electric candle*" in 1876, that the electric light entered the region of familiar objects. "Luminous paint," a preparation of phosphoric nature, which absorbs the sunlight during the daytime, and gives it out faintly but usefully during darkness, was made public in 1879. Not only are our means of illumination far superior to those of our ancestors, but so also are our means of obtaining light or fire. The "flint and steel" was not a great advance upon the simple savage expedient of rubbing a couple of pieces of wood together until the heat engendered by the friction burst into flame. *Congreve matches* tipped with phosphorus, were introduced in 1842, and those of improved form in 1853.

In LOCOMOTIVE facilities the advance of the present century has been marvelous. The *railroad* and the *steam-packet* have been elsewhere mentioned, and these are of course the great agents of the change. But in lesser matters also the progress has been marked. *Cabs* (or *cabriolets*) was first introduced for hire in London in 1823; *omnibuses*, which had been originally established at Paris in 1662 by a royal decree of Louis XIV., were resuscitated in the present century, first by a six-wheeled omnibus in 1800, and subsequently by Shillibeer, who adopted the present style of vehicle in 1829. The *street tramway* and *car* was introduced into London by Mr. Train, an American, in 1862, but not brought into regular use until several years subsequently. The first *velocipede* (from the Latin words, *velox*, swift, and *pes*, *pedes*, a foot), was invented by two Frenchmen in 1799. One called the "Accelerator" was patented in England in 1819. Both these, as their names import, were simply adjuncts to give speed to the foot, and consisted of a front and back wheel, connected by a bar upon which the pedestrian sat, and propelled the machine and himself along by the alternate pressure of his toes to the ground. Under the name of "Dandy horses," these primitive veloci-

pedes were in much favor with certain exquisites in England, early in the present century. The *bicycle* (from the Greek *bis*, two, and *kuklos*, a wheel), and tricycle were brought out at Paris in 1867, and introduced into England in the course of the following year. Another singular application of rotary motion is the *wheeled skate*, for using on some smooth surface, as an asphalte or cement floor, which came into vogue about 1870, and after creating almost a *furore* subsided into semi-obscurity. The surface on which these skates are used is termed a "rink," (from a Scotch term applied to the smooth, cleanly-swept ice, upon which the Northern game of "curling" is played). The ordinary skate for ice is more ancient. Stowe tells us that the young Londoners of his day bound the smooth leg-bones of the sheep er pig beneath their shoes and slid over the ice thereon. Skates with irons of the present form came into England from Holland.

Despite the confident hopes of many philosophers, during the century which has elapsed since the brothers Montgolfier ascended at Paris, in 1783, in the first balloon, but little progress has been made in aerial progression; and at present the dream of the Laureate of "the heavens filled with commerce," and the argosies of the air "dropping down their costly bales," do not seem likely to be speedily verified. But the realm of water has been better vanquished than that of air, not only upon its surface, but in its depths. The first *diving-bell* was probably tried at Cadiz, before the Emperor Charles V., in 1509. Dr. Halley, in 1716, greatly improved the method of air supply. But it was not until 1834 Mr. Dean invented a *diving-dress*, which permitted the wearer to be independent of the bell, and to have free locomotion with the range of the elastic tubes by which the air is pumped down to him. The greatest achievement is, however, the discovery of Mr. Fleuss, who demonstrated in 1879 that it is possible to descend to a great depth without any connection with the upper air, and to continue there for prolonged periods, fortified by chemicals, which solidify the expired carbonic acid gas. In another manner of rendering not only submarine progression easily, but also by removing the impediments of giant mountains, the present century stands alone—that is to say in tunnelling. A remarkable work of this kind is the tunnel completed in 1843 by Sir J. K. Brunel, beneath the bed of the Thames, having a total length of 1,300 feet. This was followed by some remarkable tunnels for railway purposes, generally through alluvial soil, until at length, in the tunnel of Mont Cenis, the continental engineeers assailed the very rock itself, and bored, by means of delicate machinery worked by condensed air, through the very heart of the gigantic mountain.

In nothing, sad to say, has humanity made greater progress since the commencement of the Nineteenth century than in the art of mutual destruction. Cannon, as we have seen, were used at Crecy in 1346, and hand guns, invented by Schwartz in 1378, were introduced into England ten years later. But these old engines, fired by a bit of lighted match, were very different things to the "arms of precision" of our day. Small arms have gone on steadily becoming more deadly. Since Colonel Minie introduced his system of rifling in 1833, M. A. Chassepot brought out his rifle in 1866, and the Prussian "needle-gun" was perfected in 1848.

England, too, has had to abandon the old musket—the "Brown Bess" of the past—for the Martini-Henry rifle. Rifling the bore was applied to cannon by Sir W. Armstrong in 1857, and another system by Sir J. Whitworth in 1860. The celebrated "Woolwich infant," weighing 80 tons, and throwing a ball of 1,650 lbs. was finished in 1874. The *mitrailleuse*, an engine consisting of several barrels united together in such wise that a shower of bullets could be thrown at one discharge, was first used by the French in 1866.

Scarcely less important than the common things of nature and human invention, amidst which we live, are those things of ART, which lead the mind to new perceptions of the beautiful, raise it to a higher plane, and have, happily for humanity, been growing more and more common with the development of the race. The early savage had, it is true, that beauty of the natural world which Providence denies to none upon which to feast his eyes and ears. The vivid tints of the sunset, the starlit heavens, the bright colors and soft perfumes of flowers, the melodies of birds, the murmur of the ocean, or the glorious swell of the thunder peal were his. But of beauty as educed by man from material nature he knew very little. For him the unformed block of marble held no statue; form and color had little meaning, and music save in a monotonous war-song or clapping of hands did not exist. How widely different the condition of civilized man, to whom all the glorious resources of art which sculptors, painters, and musicians can command are open, and who may truly say of the forms which art has brought to life,

> "Ever their phantoms arise before us,
> Our loftier brothers, but one in blood;
> At bed and table they lord it o'er us,
> With looks of beauty and thoughts of good."

CARVING would appear to have been man's first attempt at art work. There is in the Museum at South Kensington, a deer bone carved with a rough sketch of an animal resembling the elk. This singular relic is supposed to date back to the very earliest times, whilst man was still a homeless, naked savage. And to carving he has adhered as his condition improved. Many of the islanders of the South Pacific excel in the carving of elaborate and frequently beautiful designs upon the paddles of their canoes, war-clubs, etc. The Egyptians carved lotus-flowers on their temple pillars and ornamental designs upon their mummy-cases. The Assyrians and Persians followed in their steps, and the Greeks and Romans made great advances upon the latter. The greater number of ornamental forms used by us, either for carving or other decoration, we owe to the Greeks. To the Saracenic Arabs we are indebted for the exquisite oriental style of ornamentation known as "arabesque," which consists in interlaced and varied patterns carved on walls and elsewhere, and brightly colored and enriched with gold. The great architects of the middle ages used carved ornamentation freely, frequently imitatating the natural products of the vegetable and animal kingdoms. Amongst easily recognizable carved ornaments may be enumerated most of the square and carved *mouldings*, the *fret* (or key) *pattern*, the *egg* and *dart ornament*, the *acanthus leaf* and the *fluted* column, all invented or per-

fected by the Greeks; the *guilloche* by the Romans, the application of *mosaics* to wall decoration by the Byzantine artists, and *window tracery*, *boutel mouldings*, etc., by the Norman architects.

Foremost amongst the *Plastic Arts* stands SCULPTURE, especially as applied to the reproduction of the human form, either singly or in groups, and in different materials, usually, however, marble or bronze, the former being brought to shape by the aid of the mallet and chisel, the latter cast in a mould of loam previously taken from a clay or plaster figure modeled to the form which the completed statue is to have. The greater number of our public statues are of bronze, which was also a favorite material with the ancient Romans. Statues for galleries, monuments, etc., are usually of marble. Pliny says that, previous to the time of Dipœnus and Scyllis, the Cretan sculptors, all statues were of wood, and that they first produced figures of wrought and polished marble, The Greeks were the greatest sculptors whom the world has known, and amongst them *Phidias* (about 440 B. C.), was pre-eminent. The Elgin Marbles in the British Museum are supposed to be the work of Phidias or his school. Amongst other great ancient statuaries may be named *Praxiteles* and *Lysippus* (about 360 B. C.) During the middle ages and onward we have *Ghiberti* (1420–1450), casts of whose magnificent gates to the Florence Baptistry are in the Crystal Palace; Michael Angelo (1474–1564), Antonio Canova (1757–1822), Thorwaldsen (1770–1843), and John Flaxman (1755–1826). Separate works are either single statues or groups. Sculptured scenes and figures projecting from a wall are spoken of as *in relief*. If they project much, the sculpture is an *alto-relievo* (or high relief), if on the contrary the projection is but slight, the work is a *basso-relievo*, or bas relief, low relief.

PICTORIAL ART, in the form of PAINTING, appears to claim great antiquity. Many of the brilliantly colored frescoes on the walls of Egyptian temples probably claim an antiquity of five thousand years. Polygnotus (450 B. C.) is said to have been the first portrait and historical painter amongst the Greeks. Apelles (B. C. 330–306) was their greatest artist. Pansias, of Sicyon, is said to have been the inventor of *encaustic* painting (about B. C. 360–330.) Painting was introduced at Rome (B. C. 291) by Quintus Fabius, styled *pictor*, or the "painter." After the fall of Rome, art became almost extinct, except that a few of the Byzantine artists (so called from Byzantium or Constantinople) conserved some of its practice and traditions. Painting began its revival in Italy with Cimabue (about 1270) and Giotto (about 1300), and their followers. Subsequently they divided themselves into schools, according to the different styles of their art. The Italian schools are the Roman, Florentine, Boulognese, and Venetian; there are also the French, Spanish, Flemish, Dutch, and English schools. Of the Italian schools the three greatest painters were Leonardo da Vinci, whose most celebrated picture "The Last Supper," was painted upon the inner wall of a Milan monastry about the year 1500, but is now in a very decayed condition. Raphael, the greatest of Italian painters, was born in 1483, and died, aged thirty-seven, in 1520. His greatest picture is the "Transfiguration" in the Vatican at Rome. Seven of Raphael's cartoons were purchased

by Charles I., and placed at Hampton Court. Michael Angelo Buonarotti was born in Tuscany in 1474. His most famous work is the "Last Judgment," painted on the ceiling and wall of the Sistine Chapel. Angelo was a sculptor and an architect. He died in 1563. Correggio was founder of the Parma, or Lombardy school, the chief characteristics of which were harmony of colors and a powerful contrast of light and shade. He died in 1534. Titian, a painter of the Venetian school, was a contemporary of Correggio, and was born about 1480. He died in 1576. Tintoretto and Paul Veronese succeeded him in the Venetian school. The Caraccis were three kinsmen and noted painters, who founded the Bolognese school and flourished about 1641. Albert Durer was born at Nurnberg in 1471. He has been styled the father of the German school of painting. Died 1528. Salvator Rosa was an Italian, born in 1615. Died in 1673. He was painter, poet, musician, and actor. Claude Lorraine, or Gelee, was born in Lorraine in 1600. He was a great landscape painter. Died in 1682. Nicholas Poussin and Charles le Brun were two celebrated masters of the French school; the former died in 1665, the latter in 1690. Watteau, born in 1684, died 1721, was a French painter, his style of art is very peculiar. Greuze was another celebrated French artist; he was born in 1726, and has been styled the French Hogarth. Died 1805. David, a painter, the founder of a French classical style, died in 1825. Rosa Bouheur, born in 1822. This French lady has gained renown as an animal painter. Peter Paul Rubens, the head of the Flemish school of painters, was born in 1577, died 1640. Anthony van Dyck died 1641. David Teniers, the younger, died 1694, and Snyders, died 1657, were all masters of the Flemish school. Rembrandt, admitted to be the head of the Dutch school, was born 1606; died 1669. Paul Potter, another eminent painter of the Dutch school, was born in 1625, died 1654. Among other distinguished painters of the Dutch school may be mentioned Cuyp, Terburgh, Ostade, Hobbima, Karl du Jardin, Jan Steen, Van de Velde, Ruisdaal Gerard Douw, Berghem, and Wouvermans, all of whom flourished in the Seventeenth century. Velasquez, who died in 1660, and Murillo, who died in 1682, are the two great masters of the Spanish school. Murillo is the best known, and his numerous works are highly prized. Painting rose to eminence in England during the Eighteenth century, but a class of native painters had sprung up prior to this, owing to the encouragement given to art by Charles I. Hogarth, born in 1697, was the first distinguished English painter. He died 1764. Sir Joshua Reynolds, the greatest English portrait painter, was born 1723. He was the first president of the Royal Academy, founded 1768. Died 1792. Gainsborough, died 1788, Benjamin West, died 1820, John Opie, died 1807, and Sir Thomas Lawrence, born 1769, died 1830, were renowned contemporaries of Reynolds. Turner, Ward, Stanfield, Mulready, Frith and Cooper may also be mentioned as members of the English school. Art in general, the universal language, will combine in America, English common sense, French taste and Italian excellencies. In no nation will its refining and elevating influence be stronger felt.

TO TICKET HOLDERS.

On February 4th and 11th, Prof. W. C. Richards, A.M., Ph.D,, of Chicago, will give before the Bureau his two delightful and instructive popular science entertainments. Subjects: "FASCINATING ELECTRIC FORCES" and "WONDERS OF AIR AND WATER."

EXPERIMENTS, of Lecture February 4th.—The Magic Tube, The Electric Flash, The Exploded Jar, The Fiery Ladder, Illuminated Eggs, The Illuminated Water, The Miners' Safety Lamp, Ignited Platinum, The Protecting Rod, The House Burned by Lightning, Magnets Made of Steel and Iron, The Magical Rings, The Swarm of Iron Bees, Magnetic Engine Running, Iron Rod Suspended in the Air, Phosphorescent Display, Auroral Lights and a Series of ELECTRIC FIRE WORKS, to close with the Beating of THE ELECTRIC GOBLIN DRUM.

EXPERIMENTS, of Lecture February 11th.—Absorption of Oxygen from the Air, Blowing the Candle Out and In, The Lake of Fire, Making Nitrogen, Making Air, Shower of Fire, Ice Volcanoes, Firing a Cannon by an Icicle, The Combustion of Iron, Steel and Magnesium, Decomposing Water, Hydrogen Flames, Burning and Exploding Soap Bubbles, Musical Flames, Balloon Experiments, Making Carbolic Acid, The Pillar of Fire, and THE MOCK SUN.

The Philadelphia *Press* says of Prof. Richards: "He has the enthusiasm and skill of his great predecessor, Sir Michael Faraday, and holds the dullest ear entranced."

We also take pleasure in announcing to parents, teachers and others, that the management have secured Prof. Richards to give in the Tabernacle, on Saturday afternoon, February 11th, at 3 o'clock (doors open at 2), a *Grand Science Matinee* for the children of Cleveland. Subject: "*The Wonder World.*" We give below some of the novel and amusing experiments, which are full of fascination and instruction. Please read the list to your children.

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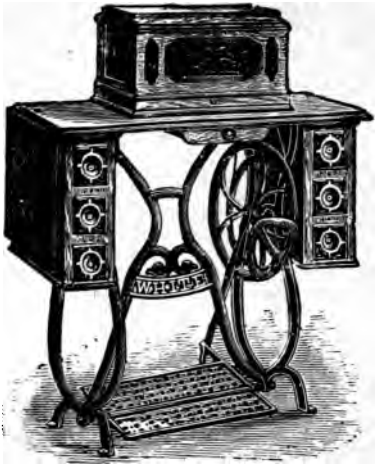

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GEORGE STEPHENSON,

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FOUNDER OF THE

RAILWAY SYSTEM

CONSTRUCTOR OF THE

First Passenger Railway

IN ENGLAND.

HOW THE POOR COLLIERY BOY
BY PERSEVERANCE BECAME FAMOUS.

PUBLISHED BY

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CLEVELAND, OHIO.

1882.

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CLEVELAND EDUCATIONAL BUREAU.

GEORGE STEPHENSON.

"He lived to cast a mighty net; and his signet-mark on the earth's surface has been ruled in parallels of iron. He is the patriarch of an iron age, with its leveling principles, its expansive forces, and its accelerated progress."

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LIFE OF GEORGE STEPHENSON.

GREATNESS ACHIEVED UNDER DIFFICULTIES.

It is seldom that we find in a single life such a concentration of the truly heroic, so grand and universal, and withal so hearty and cheerful a lesson, as is presented in the career of the Northumbrian pitman, who wrought for shillings while preparing to increase his country's wealth by millions,—who, laboriously mastering the alphabet after he had attained to manhood, was destined to teach the wise men of his century how to use the power whose agency should bring into communication and fellowship the remotest nations of the earth,—who cheerfully sat down to patch the jackets and cobble the shoes of his fellow pitmen, by the light of the engine fire, to earn the pence for the night-school, where he, a grown man, learnt to read, write, and cipher,—the man who was to be the gainer of one of those mighty victories of peace, infinitely grander in their nature than the triumphs of war, inasmuch as they construct and create, spreading blessing and prosperity, where war's triumphs bring but sorrow and desolation. "Some are born great," says Shakespeare's Malvolio, "some achieve greatness, and some have greatness thrust upon them;" and in the careers of the majority of eminent men, there is a mingling of the three elements; the advantages derived from birth and station and inherited wealth, and not unfrequently the influence of favoritism and patronage, forming very important factors in a successful career by their fostering assistance to ability. Thus even in the career of the great Duke of Wellington, we cannot leave out of view the aristocratic birth and surroundings, which enabled the future hero to spring so lightly and jauntily up the first steps of the ladder of promotion, and made a lieutenant colonel of him within six years of his entering the army as ensign. The younger Pitt, great as he undoubtedly was as a statesman, and worthy of his high position, to a certain extent had greatness thrust upon him, when, through royal favor, he became Chancellor of the Exchequer in his 23rd, and Prime Minister in his 24th, year; and in the careers of the great Sir Robert Peel, Sir Francis Bacon, the Duke of Marlborough, and a host of other worthies who have left a great name behind them, the influence of favoring circumstances can be traced, and must be ignored. But in Stephenson's case these are entirely wanting. No soldier in life's battle rose so completely and gloriously from the ranks as did the man to whom we owe the great railway system of the world. No man was more fully entitled to say, with Schiller's ideal German peet, "Selbst erschuf er sich den Werth." What he was worth he owed to himself. If a writer of fiction sat down with the avowed purpose of portraying a man who by indomitable tenacity and perseverance, sterling worth and nobleness, and unassisted genius, triumphed over the most formidable obstacles, and achieved a success colossal in itself, but with its greatness enhanced tenfold by the straightforward honesty, the undeviating rectitude that compelled respect while it extorted admiration, he could hardly, from his unfettered

fancy, have evolved so complete a picture as the history of George Stephenson presents in reality. Fact is here, as elsewhere, stranger than fiction.

A HERO FROM THE RANKS.

By the working millions, the life of Stephenson can hardly be read without a glow of honest pride, and from beginning to end it is fraught with encouragement. It is so emphatically a *good* life, so full of honest, healthy effort, so thorough and real from beg nning to end. *Integer vitæ* might appropriately have been taken for the motto of George Stephenson. Whatever his hand found to do, he did with his might. There was a manly modesty about him, a simplicity that had in itself an element of the heroic. Mr. Pease of Darlington, to whom he came to speak about the projected railway from that town to Stockton, was at once taken with his quiet, manly demeanor. There was such an honest, sensible look about him, and he seemed so honest and unpretending. He spoke in the strong Northumbrian dialect of his district, and described himself as "only the engine wright at Killingworth; that's what he was." A working man laboriously raising himself by sheer hard work, cleverness, and genius, with all his modesty he was yet self-possessed and self-reliant. He had thought out what he asserted, and thoroughly believed in its truth; and when called upon, would give his opinion without fear and without favor. He explained to King Leopold of Belgium, in the palace of Lacken, his views concerning the Belgian coal-fields, with as much coolness as if he had been addressing one of his own companions or friends; using his hat as a model whereon to demonstrate his propositions, and afterwards humorously mentioning to Mr. Sopwith, who was with him, his anxiety that the King should not see the inside of his hat, "which was a shocking bad one." "Robert's good-natured, you see," he said to Lord Howick, who had come to see his son in reference to a scheme in which that nobleman was greatly interested; "and if your Lordship were to get alongside of him, you might talk him over; so you have been quite lucky in meeting with me.... You may take my word for it, my Lord, it will never answer." Lord Howick was a wealthy magnate, an influential nobleman; but "a man's a man for a' that!" In a question concerning a railway it was George Stephenson first, and Lord Howick nowhere; and, like an undaunted Briton as he was, the ex-pitman would speak out his mind in his own plain, practical way.

And one other point we would notice before proceeding to give the outline of this great and useful life,—an important point, for it puts in a clear light the magnitude of the difficulties against which our hero had to contend, in comparison with the position of the humblest toiler of the sea or land at the present day. No one, not the poorest of orphan children, now begins to fight the battle of life, without being provided, at the State's cost, if need be, with those weapons of education which Stephenson had to purchase for himself at a cost of much labor and self-denial. Happy indeed would Stephenson have been to procure the instruction now offered to all, and great would have been the saving of years of that valuable life. But in his time national education did not enter into the philosophy of government; and he had to enter upon the task of self-tuition without even the books that modern improvement has brought within the reach of all. How he did it will appear in the story of his life.

BIRTH, SURROUNDINGS, AND EARLY YEARS.

A hundred years ago, there stood close to the little village of Wylam, dependent upon the colliery of the same name, a small detached house, an ordinary laborer's cottage of one story. It was known as High Street House, and is still standing,—an object of interest now, for here, in a bare-raftered, clay-floored room, George Stephenson was born, on the 9th June, 1781; just at the time when the truth of Lord Chatham's words, "You cannot conquer America," was beginning to dawn on the English Government, and noble Lords and honored gentlemen in Parliament were at least inclined to doubt whether the "rebel Washington" might not prove too hard for them after all. The parents, Robert Stephenson, known as Old Bob, and his wife Mabel, with their children, was described by an old Wylam collier, from personal recollection, as "an honest family, but sair hadden doon i' th' world:" in other words, they were very poor,—for Old Bob only earned $3,00 a week as fireman at the colliery; and poor Mabel Stephenson, though "a rale canny body," must have had considerable difficulty in keeping house on that very exiguous income; and though George was only the second son, by 1792 the number of children in the collier's little room had increased to six. By the time the family of eight were fed, and very indifferently clothed, the wages were exhausted. and so none of the children went to school. Little Georgie accordingly was dragged up after the rough but not unkindly manner of many poor men's children, getting no book schooling, but passing through the country boy's curriculum of birds'-nesting, straw- and reed-whistle making, errand running, and, in quality of nurse, lugging about the younger children as they successively appeared.

Old Bob seems to have been anything but an unkindly character, though somewhat eccentric in his ways and manners; or, as an old miner quaintly described him, "as queer as Dick's hat-band—went thrice aboot an' wouldn't tie." He told the children stories of Robinson Crusoe and Jack the Giant Killer by way of education, took George for country walks, and awakened in the little lad a love and interest for animals and plants that remained with him throughout his life.

And here, as elsewhere, a "trivial cause" might be found connected with future "great events." In front of the old High Road House ran a tramway, or road, along which the wagons laden with coal were drawn by horses from the pit's mouth to the wharf some miles distant. Railways, or plateways as they were often called, had been in use, under various forms, for a century and a half in the mining districts. It was part of George's duty to keep his younger brethren from being run over by wagons. Wylam road at that time was a mere wooden tramway; but who can tell what influence it had on the mind of the future engineer? When George was eight years old the family removed to Dewley Burn Collliery, where "Old" Bob was again fain to establish his household goods in a single room. Little George's observant nature was here displayed in that "childhood play," in which the poet declares that "much meaning lurketh oft." He amused himself with Bill Thirlwall, a playmate, by modeling a clay engine, with hemlock-stalk steampipe, and little cork corves, or baskets, in imitation of the apparatus at the mine,—a sharp little fellow, evidently observant and imitative, and sure to go through the world with his eyes open.

SMALL BEGINNINGS—STEPHENSON'S EARLY YEARS.

From the lowly agricultural occupation of herding a widow's cows at twopence per day, to the more honorable office of a leading the plough horses, and hoeing turnips at double the wages, the boy passed on to work at the colliery, earning a daily sixpence, raised to eightpence when he was appointed to drive the horse that turned the gin,—"a grit growin' lad, wi' bare legs and feet," said an old miner afterwards, who knew him well. He acquired the reputation of a lively fellow, quick and ready, and full of fun and tricks. At first, growing lad though he was, he feared he might be considered too small for the place, and used to hide when the owner came round, lest he should be sent away. Thus he wrought at more than one colliery, until he was promoted to man's wages, $3.00 per week, at Throckley Bridge, and declared himself "a made man for life."

Presently he was appointed plugman, or engine man, to the engine of which Old Bob was fireman; and thus at seventeen he had passed his father in the race of life; for the plugman's position is considered more responsible than that of the fireman, and he was supposed to be able to remedy any slight defect in the machinery without applying to the engineer. George Stephenson soon made himself thoroughly familiar with the construction and working of every part of his engine, which appeared to him a wonderful monument of human skill and ingenuity; and it was characteristic of the man, that whatever knowledge he acquired, he tried to verify it practically. Long afterwards, when there was a debate as to the name to be given to the first railway coach employed in passenger traffic, Stephenson, on being appealed to, suggested, in his strong Northumberland Doric, that it should be called the "Expurriment," and the "Experiment" accordingly became its name. It was by experiments, patiently conducted and carried out with marvelous perseverance, that he accumulated fact upon fact, laying up in his capacious brain a store of knowledge, to be drawn forth to excellent purpose when the time came. But that time was still in the far future. He was yet dependent on the good offices of any one whom he could get to read to him out of a stray book or newspaper, by the light of the engine fire. Thus he heard of the great Italian campaigns, in which young General Bonaparte was gathering laurels. Thus also he came to hear of the Egyptian method of hatching eggs by heat, and at once made an attempt, with partial success, to carry out a similar operation on a number of eggs collected from nests in the neignborhood. But he found that without a knowledge of reading, writing, and arithmetic, his opportunities of self-culture would always depend on the good nature of others. So he manfully determined to begin from the beginning, and went to a night-school to learn his letters, afterwards paying an additional weekly penny to include "figuring" in his course of study. The immediate impulse to this educational movement arose from his desire to understand the engines of Watt and Boulton, about which he had heard that books bad been written. By mending the shoes of his fellow-workmen he contrived to increase his earnings; and it is characteristic of the thoroughness with which he carried out all he attempted, that he became a very fair shoemaker, and could make a pair of boots as well as patch them.

By this time he had mounted another step of the ladder. Becoming known as a careful and intelligent workman, he was, though not without some jealousy on the part of his fellows, appointed brakesman at the Dolly Pit, undertaking the responsible duty of managing the machinery by which the corves, or baskets containing the coal and the men who worked in the pit, were hauled up and down. The men were then paid every second week; and when the young brakesman's fortnightly wages came to average ten dollars, he thought it time to marry. He chose for his partner Fanny Henderson, a servant at a neighboring farm, and a very comely, admirable wife she was to him. In 1803, his happiness was increased by the birth of a son, who was christened Robert, after "Old Bob," his grandfather.

SELF-CULTURE—STEPHENSON'S EDUCATION.

At this period of his life, George Stephenson appears, from the anecdotes collected from his fellow-workmen by his judicious and appreciative biographer Mr. Smiles, as a hearty, stalwart workman, remarkable for his agility and physical strength, and fond of athletic sports, such as wrestling and tossing the hammer, in which he was an adept: but exceedingly steady, never seen, like too many of his fellows, the worse for "yel" (ale), and known to be thriving in his small way, and saving money. A man not to be ' put upon," moreover, as he proved by a fair standing fight with a pitman named Nelson, the bully of the colliery and the terror of the village. This worthy had taken upon himself to impugn Stephenson's skill as a brakesman, and had threatened violence; in return for which the undaunted "Geordie" had bestowed upon him, at time and place duly appointed, as neat and complete a licking as any man need wish to see given and received. The men shook hands in their hearty north country fashion, and became afterwards good friends.

Stephenson in later life often regretted his want of early instruction. His active and inquiring mind led him to investigate and "think out" anything that was new to him; and he complained that often, after he had hit upon what he considered a discovery, and after many endeavors to reduce his efforts to a practical result, he found he had been wasting time and pains on a long-exploded fallacy; not entrely wasting them, however; the habit of bringing his theories to the test of actual experiment, proved infinitely valuable to him, and gave to his opinions a solid value, as having stood the test of experience. Among the subjects that engaged his attention during the happy but few years he spent with his wife in his cottage at Willington Quay, near New Castle, was that of the "perpetual motion;" at one time, like many others who have followed that scientific *ignis fatuus*, he fancied he had discovered the secret of the *perpetuum mobile*, only to find himself deceived. A more satisfactory occupation consisted in the modeling of various machines, in which he was indefatigable. And here, by his practical and workmanlike habit of attention to detail; by his custom of taking his models to pieces and putting them together again, and his plain common sense method of proceeding from point to point. making sure of his ground as he went on, he was putting himself through a training that was sure to bring success when the opportunity should come. An accident that occurred at Willington illustrates this pleaaantly enough.

One day while he was absent at his work, the chimney of his house caught fire. The zealous neighbors poured such a flood of water down the said chimney in their efforts to extinguish the fire, that the proprietor, on his return, found his house flooded, and his furniture covered with soot. In particular, a clock, one of the most valuable and cherished articles among his household goods, was so choked up, blackened, and disfigured that there seemed nothing for it but to send it at once to the clockmaker for cleansing and repairs. But Stephenson determined to get a lesson in mechanics out of the incident by repairing the clock himself. He took it to pieces, and put it together again, and set it going with complete success, to the wonder and admiration of the mining community. And this opened a new field of industry and of profit to him; for from that time he was installed by common consent clock-doctor to the village, to the comfortable increase of his modest emoluments. Another of his accomplishments consisted in making good shoe-lasts.

A TIME OF CALAMITY.

But now a great calamity came upon him. After a few years of happy, cheerful union, his wife died of consumption, leaving him alone with his little Robert. The warmth of affection in his genial nature seemed now to concentrate itself on this child, who became as the apple of his eye. To give the boy every possible advantage, and especially that great advantage of education he had himself never enjoyed, became the chief object of his life. To provide the funds for the lad's schooling he afterwards added tailoring to his other methods of getting money, cutting out the pitmen's clothes, and fashioning them much to the satisfaction of the sturdy miners, who highly approved of "Geordie Stevie's cut." Long afterwards, when the daughters of Mr. Pease expressed surprise at his knowledge of the art of embroidery, he explained that he had acquired his skill by sewing the button-holes of the miners' coats. It is pleasant to record that the self-sacrificing affection of the father was fully acknowledged and reciprocated by the son. Robert Stephenson, with his father's example before his eyes, became emphatically "a chip of the old block;" making the best of the opportunities afforded him, imparting the knowledge he gained at school to the delighted father of an evening, and afterwards acquiring the art of shorthand, to take down the lectures he heard at Edinburgh, that he might afterwards copy them out evening by evening for his father's delectation when he returned home after the session. In the sequel he became hardly less eminent than George Stephenson himself, and the Menai Tubular Bridge, and other great engineering works, remain to tell of a great career nobly run.

But all this was in the future. Robert was still a little child when his bereaved father, consigning him to the care of a trustworthy woman for a time, went off from the Killingworth Colliery, where he had been employed as brakesman for some time when his misfortune befell him, to look after a Boulton and Watt engine in a spinning factory near Montrose; for his fame as a skillful engineman had by this time become well-known. He returned after an absence of nearly a year, during which he had saved nearly $150.00 from his wages, to find his parents in poverty and debt, his father having lost his eyesight through a jet of steam carelessly turned on by a fellow-workman. He at once paid the old

man's debts, established the couple in a cottage, and provided for their support for the remainder of their lives.

The war weighed heavily on the nation during the years 1807 and 1808, crippling industry in various directions, increasing taxes, and imposing a heavy burden on the country in the shape of greatly augmented forces for the army and navy. George Stephenson had good reason to deplore Lord Castlereagh's war policy, for he was drawn for the militia, and it cost him nearly the whole of his savings to procure a substitute. Emigration presented itself to his mind as the best course in the depressed state of his affairs. His sister Anne actually went away to the United States with her husband. She died more than half a century afterwards, in 1860, at Pittsburgh. It is said that only the want of means prevented her brother George from following. Fortunately, however, for his country, and perhaps for himself and his future fame, he stayed; and after the stormy period—during which, as he afterwards acknowledged, his heart once almost failed him—the sun began to shine upon him once more.

FIRST ESSAYS IN ENGINEERING.

He had been known as a clock-doctor; he was now to establssh his reputation as an engine doctor. At the Killlngworth High Pit there was a certain engine, of the atmospheric "Newcomen" kind, that entirely failed in its duty of pumping out the water from the mine. All the engineers of the neighborhood had tried their hands on this ungovernable engine, as well as Crowther of the Ouseburn; but they were all "clean beat." Ralph Dodds, the head viewer, appiled to Stephenson, who undertook to cure the engine—stipulating, however, that he should choose his own men for the work. The "drowned out" viewer promised to make a man of him for life (a very unnecssary office in the case of Stephenson the self-made) if he succeeded. Stephenson set to work, took the engine completely to pieces, cured the defects his sagacity had detected, and received for his pains a great deal of credit and ten pounds, the largest sum he had ever gained in a lump. Crowther of the Ouseburn and his colleagues stared and wondered; and George Stephenson hrd established his reputation as an engineer. "He was called upon," says Mr. Smiles, "to prescribe remedies for all the old wheezy and ineffective pumping machines in the neighborhood. Ralph Dodds also was as good as his word, so far as regarded the furthering of George Stephenson's interests. He made him engineman instead of brakesman at High Pit, with increased wages; and soon the frugal workman had $500.00 saved up in guineas. And when, in 1812, the engine-wright at the Killingworth Colliery was killed by an accident, Dodds spoke so warmly in his favor to the gentlemen who leased the various pits,—Lord Strathmore, Sir Thomas Liddell, and Mr. Stuart Wortley,—that he was appointed engine-wright, at a salary of $500.00 year.

JEALOUSIES—HISTORY OF THE "GEORDIE" LAMP.

He was now, so far as worldly circumstances were concerned, at the height of his ambition, with a handsome cottage wherein to dwell with his promising boy, a stout little galloway on which to ride from pit to pit on his journeys of inspection, and a salary that amply sufficed for his frugal wants. But even the modest success he had achieved—gained as it was by sheer hard work, energy, and perseverance—was not won without exciting a considerable amount of envy and malevolence. Many

of the regular engineers, uneasy at his success with the wheezy machines they had failed to cure, assailed him with the accusation of empiricism generally cast by regular practitioners at outsiders who have been guilty of achieving good results in a profession, without entering by the usual door, and mounting by the accredited gradations. He was a mere quack, this Killingworth brakesman, they said, and his practice was unsound and deceptive. That George Stephenson had little theoretical knowledge when he began engineering there is no doubt; and he often arrived at conclusions by what scientific reasoners would call utterly irregular and insufficient premises. But he had studied the practical part of his calling with a devotion and a perseverance as rare as they were admirable; and his rugged sagacity and ready inventiveness often hit on a remedy where the regular professors were at fault. He was now about to enter on a phase of his career where the opposition and enmity of accredited men in office against the outsider, the "impertinent brakesman," was to be shown in a far more decided and malevolent way. But he met his opponents as undauntedly as he had encountered Nelson the pitman at his first and last combat with physical weapons. The occasion for the display of professional enmity was connected with the celebrated "safety-lamp" controversy. For years the deplorable accidents occurring from time to time through the explosions of the terrible fire-damp in mines, and involving the sacrifice of a number of lives annually, had awakened sorrow and pity in the public, and serious attention, with the hope of discovering a remedy, among scientific men. George Stephenson's great heart was filled with sorrow for the miners whose lives were so often sacrificed, and for widows and children left destitute, (in one accident in 1812, ninety men and boys perished,) and for some years he was occupied with experiments towards the construction of a safety-lamp that should obviate these terrible calamities, to which Killingworth Colliery, with its 160 miles of gallery space, was especially liable. Of what stuff he was made he proved on that memorable day in 1814, when an affrighted pitman rushed into his cottage declaring that the deepest main of the colliery was on fire! He at once rushed to the pit's mouth, caused himself to be lowered, and as the corve touched the ground, leaped out, calling upon six men to follow him, and they would put out the fire. His intrepidity acted like magic upon the affrighted miners. Order and discipline took the place of confusion and dismay. Tools and bricks and mortar were at hand, and under Stephenson's direction, a wall was at once built that, by excluding the atmospheric air, soon put an end to the danger, and saved the pit and many of its occupants. "The sooner you start the better," said a workman to the heroic engine-wright a few days afterwards, when Stephenson observed that he thought something might be done to prevent these awful explosions, "for the price of coal-mining now is men's lives." This naturally stimulated Stephenson's zeal and industry. He continued his experiments, conducting them in his own homely, independent way, much against scientific rules sometimes, but always intelligently, with a practical bearing upon the end in view. At last, in October, 1815, the difficulty was solved. He had, after various trials, constructed a lamp which would give light without setting fire to the inflammable gas of the mine.

The manner in which he put the efficacy of his invention to the test was nothing less than heroic; and had this advantage over warlike courage, that it was displayed in the attempt to preserve human lives, not to destroy them. Lamp in hand, Stephenson marched forward alone, as resolutely as ever soldier marched at the head of a forlorn hope, into the recesses of the mine, where the foul air had been accumulated by artificial means. He was alone, for his companions awaited at a safe distance and with palpitating hearts the issue of the experiment, well knowing that the failure of the lamp would mean the death of the heroic inventor who staked his life on the issue. Advancing to the place of danger, and entering within the foul air, his lighted lamp in hand, Stephenson held it firmly out in the full current of the blower (the opening through which the deadly gas was rushing), and within a few inches of its mouth. The result was triumphantly successful. The great volume of gas at last extinguished the lamp, but did not burst into flame.

Thus was the principle of Stephenson's invention vindicated. But his practical sense saw various defects in his lamp, and set about remedying them. He succeeded at last in producing a throroughly workable safety-lamp, which was introduced into the Killingworth pit; and for more than half-a-century the "Geordie lamp" has remained a favorite with the miners. But the subject of safety in mines had been taken up in other and more influential quarters. Upon the invitation of a committee of gentlemen, Sir Humphrey Davy, then in the zenith of his fame, visited the Newcastle collieries, made the requisite notes; and in November, 1814, a month after Stephenson's lamp had triumphantly passed the ordeal, Sir Humphrey read a paper before the Royal Society, proposing the lamp, which as the Davy lamp, has found general acceptance. The two inventors had worked quite independently, each being indeed ignorant of the other's action; but the credit of priority is undoubtedly due to Stephenson. Shortly after, at the persuasion of some friends, he explained the principle of his lamp to a company at the Newcastle Scientific Institute; and when Sir Humphrey Davy arrived soon after to explain his own lamp, "Why, it's the same as Stephenson's," was the criticism of the shrewd north-country audience.

Of course there was a controversy as to priority, relative merits, etc., in which the favorite of the scientific world had it all his own way. The men of science could not forgive Stephenson for being a self-taught man; and long after the controversy was ended they continued to sneer at him. "It will hereafter be scarcely believed," writes pragmetical Doctor Paris in his "Life of Sir Humphrey Davy," "that an invention so eminently scientific, and which could never have been derived but from the sterling treasury of science, should have been claimed on behalf of an engine-wright of Killingworth, of the name of Stephenson—a person not even possessing a knowledge of the elements of chemistry." The reference to the "sterling treasury of science," and the "engine-wright of Killingworth," are delicious. Stephenson was not a bookman, or a man of early culture; he told the assistant at his experiments to "wise on the hydrogen," when hs wanted the hydrogen gas turned on; therefore, argued Doctor Thomas Diafoirus,—we beg pardon, Doctor Paris,—Stephenson could not possibly have inventive faculty or brains.

The friends of the engine-wright showed their appreciation of him in a very practical way. When a sum of $10,000 was voted to Sir Hum-

phrey Davy for his invention of the safety-lamp (a writer on the subject has well observed that if it had been for *the* invention of a safety-lamp there would have been nothing to complain of), Stephenson's friends got up a subscription for a testimonial to him ; Lord Ravensworth (formerly Sir Thomas Liddell), one of the Killingworth proprietors, heading the list with a hundred guineas. The sum collected amounted to $5,000 ; and the miners of the colliery emphatically put on record their view of the value of their engine-wright's achievement by starting a separate collection among themselves, and presenting him with a silver watch. They still stick to the "Geordie lamp."

THE LOCOMOTIVE ENGINE.

Another subject had occupied the attention of George Stephenson during the time of the lamp controversy. He had been pondering upon the subject of railroads, and the practicability of substituting travelling or locomotive steam engines for horse power upon them. Railroads, first with wooden afterwards with iron rails, had been in use for a couple of centuries. Since Stephenson's childhood, iron rails had been substituted for wood on the Wylam Colliery line that passed in front of the old High street House. Benjamin Outram, the father of the celebrated General, had introduced some improvements geneally copied in later "Outram roads," or "tramroads," and the question had already arisen as to the substitution of steam for horse power on the iron ways. There has been much controversy on the question, "Who invented the locomotive engine ?" The friends of various candidates naturally endeavor to give as much as possible of the credit each to his client. The truth appears to have been put in a very manly and straightforward way by Robert Stephenson, in a speech at a scientific dinner at Newcastle, when he declared that this, like most of the great triumphs of science, had been gained by successive discoveries, various inventors contributing each his quota to the great general result. To trace the progress of the locomotive engine towards the state of practical usefulness, we should have to record the labors of poor Solomon Caux, looked upon as a madman, and driven almost by with disappointment and chagrin because he was a man in advance of his age ; of Savory, who went very near to discover the real principle of the locomotive ; of James Watt, in whose scheme the construction of locomotive engines had a part, although he never had leisure to work it out ; of the Frenchman Cognot, who proposed to apply it to the traction of artillery ; of Murdoch, one of the best of Boulton and Watt's workmen ; and Symington, who actually constructed, the first an engine, the second a steam carriage, to travel on common roads ; but Murdoch, who seems to have approached nearest among the earlier inventors to making a practical success of the engine, was dissuaded and almost warned off from prosecuting his experiments by the firm he served. "I wish William (Murdoch) could be brought to do as we do," writes Watt to Boulton, "to mind the business in hand, and let such as Symington and Sadler waste their time in hunting shadows." The fact was, the great Soho firm had its time fully occupied with building stationary engines, and looked upon time and energy devoted to experiments as probably wasted. Symington is best known in connection with marine engines ; the *Charlotte Dundas*, on the Forth and Clyde Canal, may be considered the first practical steamboat ; she was

set to work in 1801. Poor Symington was the most unfortunate of men, and died in poverty in 1831.

LABORS OF RICHARD TREVETHICK.

By far the most important page in the early history of the locomotive was contributed by the Cornish man, Richard Trevethick, who constructed an engine that actually ran on a plate-way, or railway, at Merthyr Tydvil in Wales. He also constructed a "steam carriage," to run on common roads and tried it with success in 1803, at Camborne, in which town he was building engines, in partnership with a Mr. Vivian; a second and improved steam carriage was afterwards run by Vivian from Camborne to Plymouth, a distance quite sufficient practically to test its capabilities; and the inventor resolved to bring it to London for exhibition. It was sent by sea from Plymouth, arrived safely at its destination, and exacted considerable interest and wonder on being exhibited in some fields near the present Bethlehem Hospital. Then, after being favorably criticised by Sir Humphrey Davy and other eminent scientific men it was to be exhibited for money on a piece of ground, strangely enough now occupied by the terminus of the London and North-Western Railway, in the Euston Road. The steam carriage was made to run on an elliptical tramroad laid down in the enclosure. The first day everything went well; and the crowd who had assembled to see the new phenomenon went away well pleased. On the next morning a still greater throng had assembled; then suddenly it was announced that the exhibition was not to be continued. Trevethick had taken some whim into his head, and at once removed his steam carriage. Of his inventive genius there is no doubt; but unfortunately for himself he had not the persistent energy that leads to success. His teeming brain was fertile in schemes; and in every one of these there were elements of success; for his mind was far too original to be content with the ordinary and prescribed methods. "*Nihil quod tetigit non ornavit*" might be said of him as an engineer as of Goldsmith as a writer; he improved everything he touched; but he did not wait until any separate undertaking had been fairly worked out, and had arived at the profitable stage, before he began working at another. To use a homely phrase, he had too many irons in the fire at once. He withdrew his steam carriage just as it was about to yield him a goldon harvest; and set about the construction of a locomotive engine, a subject to which general attention had been attracted by recent events.

The traveller by the railway from London to Brighton may observe on the right-hand side of the road, for some distance between Croydon and Merstham, the traces of an old level road, running parallel to that on which he is progressing. This is the old Wandsworth and Merstham tramway, laid down some years before for the conveyance of stone, lime, and other weighty materials, from central Surrey to Wandsworth Creek. Wagons were drawn on it by horses and donkeys. The results obtained by the iron tramway in decreasing the draught, and the consequent increase of the weight a single horse was enabled to draw, had excited general astonishment, and set Trevethick thinking about the substitution of an iron horse for one of flesh and blood. The high pressure engine he constructed was marvelously ingenious, and appeared to solve the problem. Trevethick's works at Camborne prospered exceed-

ingly ; and it is recorded that in 1806 he had no fewer than nine engines ordered in one month, and seemed sure of making a fortune. But Camborne and Cornwall seemed to him too narrow a platform for his abilities. He came to London, "the Patent Office drawing him as the loadstone does the needle ;" and the records of that Office attest the various ideas that thronged his restless and capacious mind. One patent he took out was for constructing docks, ships, etc., and for propelling vessels ; another, which has since been brought into practical form by later inventors, was for constructing ships of iron plates instead of using timber, with hollow metal tubes for masts, bowsprits, etc. A tunnel under the Thames, and a patent for a new method of stowing cargoes, also figured among the projects originated by him, and destined to be worked out by others. Suddenly a prospect of fortune opened in an entirely new direction. Trevethick received an order on a very large scale for pumping engines, to clear the Peruvian mines of water ; and after constructing some very large and ingenius machines for the Peruvian Government, Trevethick himself set sail for the New World to superintend the carrying out of his scheme ;—the arrival of "Don Ricardo Trevethick, eminent professor of mechanics, machinery, and mineralogy," being duly heralded in the Government Gazette, at Lima, where the great engineer was received with distinguished honors. At first all went well ; but the civil war, which ended in the enfranchisement of Peru, brought ruin to Trevethick, who was obliged some years afterwards to make his way literally as a fugitive, and almost in rags, towards Panama. By a strange chance, while he was waiting at Carthagena, on the Gulf of Darien, for a ship in which he might get back to Europe, he encountered Robert Stephenson, who had been for sometime in America, in the employ of the Columbian Mining Company, and who readily lent his unfortunate brother engineer the money to pay his passage home ; for poor Trevethick was reduced almost to his last coin; and used afterwards to declare with a bitter smile that a pair of silver spurs constituted all the metal he brought home with him of all he had raised from that Peru which was to have been his El Dorado.

He was not, however, like that apocryphal husband of Mrs. Pilchin in Dickens's tale, who "broke his heart trying to pump water out of the Peruvian mines." When Robert Stephenson met him, he was as hopeful and as full of projects as ever, talking of a new company he intended to organize so soon as he got back to England. Efforts were made to procure some Government reeognition of the improvements he had made in the high-pressure steam engine and boiler, but they led to nothing ; and at length, in 1832, Trevethick died, so utterly poor that the workmen of the firm who last employed him had to subscribe to pay for his funeral ; a great inventor, but without the patience to carry one of his numerous and admirable ideas to a practical conclusion, and consequently leaving what he invented to be profitably worked out by others. He had learned to labor, but could not wait.

EARLY LOCOMOTIVES BY VARIOUS MAKERS.

But the experiments of Trevethick had not failed to excite the attention and interest of intetlligent and practical men; and among those who had seen the steam carriage in London, and had been greatly impressed by its performance, was Mr. Cristopher Blackett, the owner of the Wylam

Colliery ; whose tramroad, now furnished with iron rails, extended for some miles from the pit's mouth to the place where the coals were shipped. He was fortunate in having as his overseer in the Wylam Colliery Mr. William Hedley, with whom he held conference on the possibility of constructing an engine for drawing the coal wagons along the iron way ; and the question beeome urgent, when in 1812, on account of the increaseed price of horse fodder, due partly to the war, it was seriously contemplated to stop the working of the colliery, for a time from the expense of bringing the coal to the wharf. Already the year before, Mr. Blenkinsop of the Middleton Colliery, near Leeds, had constructed an engine for drawing coal wagons. This machine worked by means of a toothed wheel on a rack rail and answered its purpose tolerably well. Mr. Hedley, however, made the important discovery by experiment, that a smooth rail would offer sufficient friction to enable the wheels of an engine to advance upon it, if the weight of the engine was made proportionate to the load it had to drag ; and that the rack rail and toothed wheels were therefore unnecessary. It had been always thought that engine wheels on a smooth surface would "surge" or slip round without advancing. Mr. Hedley was soon able to report so favorably to Mr. Blackett in London concerning the working of the engine, that the latter wrote a congratulatory letter, expressing his satisfaction that "the iron horse had taken to the collar so kindly." "Puffing Billy," as the first Wylam engine was called, soon become one of the lions of the district. Of course it met with a certain amount of opposition, part of which proceeded from the workmen themselves, ever jealous of the introduction of machinery ; and Mr. Blackett was obliged to compromise with a determined opposition, by undertaking to stop the engine when any horse came in sight on the Wylam road. Many also were inclined to sneer at the experiments, and had much to say on the absurdity of taking up with "new-fangled notions," and the loss of time, temper, and money usually consequent on such a course. But "Puffing Billy" snorted gaily along the Wylam tramroad, impervions to hostile critlcism, and deserves with his constructor, honorable mention in the history of the invention of the locomotive engine.

Another engine was constructed about this time by the Chapmans of Newcastle ; but they did not understand the principle of the smooth rail. Consequently they tried to overcome the anticipated surging by means of a chain stretched along the road ; and their engine worked so clumsily that it was pronounced a failure, and soon put aside.

STEPHENSON'S ENGINES AT KILLINGWORTH.

Stephenson had seen the Wylam engine at work ; and soon afterwards he had an opportunity of inspecting one of Blenkinsop's engines, which was sent to the Coxlodge Colliery in 1813. With that capacity for taking trouble over anything that interested him, which was one of his most valuable characteristics, he at once began to "experiment" upon the "travelling engine," as he called it ; convinced even then that in time it would supersede the horse in working power. Lord Ravensworth, who had a high opinion of the engine-wright's sagacity, advanced money for the building of an engine, which was appropriately called "My Lord," and which was a great practical success ; for it drew after it, at the rate of four miles an hour, a weight of thirty tons. Several other engines

were made for the Killingworth Colliery, each exhibiting various improvements on its predecessor. The adoption of the steamblast in the chimney, which enabled the force of the steam to be kept up, and very greatly increased the power of the engine, was of enormous importance, as it rendered the engine economical, giving it the advantage over horse-power in the matter of saving expense. This has accordingly been claimed as the turning-point in the invention of the locomotive engine; and the same position has accordingly been claimed for George Stephenson with regard to the locomotive that Watt occupies in relation to the condensing engine. On this point, however, there is some doubt. The son of Mr. William Hedley in conversation with the writer of this sketch, was accustomed vehemently to uphold the claim of his father as the constructor of engines embodying the steamblast as a principle. That the second engine was a great improvement on the first, and that Stephenson's engines ran for many years upon the railroad at Killingworth, is nndoubted. They combined in a remarkable degree, simplicity of construction with practical efficiency in working.

One point Stephenson always maintained with especial decision, the importance of railroad in conjunction with the engine. He had no opinion of engines upon common roads, considering a great part of the advantage in the application of the engine to lie in the decrease of friction consequent on the wheel travelling on a smooth rail. By a happy illustration he designated the rail and the wheel as "man and wife," and declared they should not be put assunder. While many of the scientific men of his age were in doubt on the point, he had already made up his mind; and having formed his opinion on sufficient grounds, he adhered to to it. With him, if a thing was once true it was always true. His employers at Killingworth were proud of him, and of the reputation he was making; and when Mr. Loch, a wealthy iron-founder of Newcastle, found the money to take out a patent for improved rails, and stipulated that Stephenson should attend at the iron-works two days weekly, thay consented, as they did also when the Hatton Coal Company proposed to employ Stephenson to superintend the laying down of a line for them, similar to that of the Killingworth Company.

In 1820 he married again. His second wife was a Miss Hindmarsh, a farmer's daughter at Black Callerton. They lived very happily together; and young Robert Stephenson also had reason to be well satisfied with the course his father had taken; for his stepmother contrived to gain his complete esteem and affection.

RAILWAYS PROJECTED BY PRACTICAL MEN—STEPHENSON AND MR. PEASE.

And now the time had come when the abilities of the engine-wright were to exhibit themselves in a wider field. For nearly twenty years there had been a desire on the part of certain practical and far-seeing men to see some of the large indu-trial towns brought into communication by means of railways. Foremost among these was the eminent member of the Society of Friends, Edward Pease, of Darlington; another was William James, of West Bromwich, of whom it has been said that if he did not discover the locomotive, he did the next best thing in discovering George Stephenson. In 1803 he had started the idea of a railroad between Manchester and Liverpool, and had been looked upon as a madman for his pains. He had seen Trevethick, who had no doubt stimulated

his zeal in the cause. He was at first decidedly in advance of his time; and after losing much money, was obliged to give up his projects till they should be better appreciated, and to revert to his professiou of land-surveying. Edward Pease, a man of large means, was able to start a company for constructing a railroad between Stockton and Darlington. The idea at first was simply to facilitate goods and especially coal traffic between the two towns; passenger traffic by railway was not considered as likely to assume any appreciable proportions. The transport of coal was the idea on which the chief calculations were bassed in what was called "the Quaker's line." Three times the Bill was introduced before it passed. The first time it was wrecked through the influence of the Duke of Cleveland, who violently opposed it, in finding that the proposed line would pass near one of his fox covers. The dissolution of parliament after the Death of George III. caused the loss of another session. At length, in 1824, the Bill for constructing the Stockton and Darlington railroad was obtained.

Then it was that energetic Mr. Pease was one day waited upon by two visitors in reference to the new undertaking. One of them was Mr. Wood, the viewer of Killingworth, who came as spokesman, and to introduce the other, a quiet sensible, modest man, "Only the engine-wright at Killingworth," George Stephenson. Mr. Pease soon saw that this quiet engine-wright had invaluable information to give concerning engines and railways. He strongly dissuaded Mr. Pease from carrying out the intention of having the line worked by horse-power, declaring that a locomotive was worth fifty horses. "Come over to Killingworth, sir, and see what my engines can do," said Stephenson; "seeing is believing." The result of the interview was the bringing of Stephenson's name before the other Directors by Mr. Pease; and an official letter was dispatched by a messenger to George Stephenson, Esquire, eegineer. No such official personage was known at that place; and the envoy was about to carry home his letter in despair, when it was discovered that "Geordie, the engine wright," was the man wanted, and Stephenson's modest cottage was pointed out.

The idea of horse-power for working the railway having been abandoned, stationary engines were next proposed; but Stephenson stood manfully by his first assertion, declaring the locomotive, and the locomotive only, to be suited to the purpose. Mr. Pease came over to Killingworth, saw what one of Stephenson's engines could do, and became a convert. At the request of the Directors, Stephenson surveyed the proposed line, pointing out where considerable saving might be effected by a change in the proposed route. He was appointed engineer of the line at a salary of $1,500, a year; and persuaded Mr. Pease to have a clause inserted in the amended Act for the railway, authorizing the working of the railway by locomotive engines, and for passenger traffic as well as goods. During the survey, Stephenson made friends with all the farming people on the line of route, who gladly welcomed him into their houses, when he asked leave to cook the bit of raw bacon, which, with a hunch of bread, he carried in his pocket for his dinner. His hearty good humor, and genuine, kindly nature, made him welcome everywhere. He had his anxieties, too, though his honest pride was gratified by the new position in which he found himself. Various of the local papers were bitterly sarcastic on the new scheme, ridiculing the idea of rail-

way passenger traffic as utterly absurd and poking very heavy fun at the "roaring steam-engine," But Stephenson never doubted the ultimate success of his plans. He had bestowed too much thought and care upon them for years to be frightened by squibs, and persevered manfully.

On one occasion, when, with his son Robert and his friend John Dixon, he had gone the length of ordering a bottle of wine after dinner to drink success to the railway, then in an advanced state of construction, he burst out in remarkable words of prophecy, recorded at the time by Dixon. They prove how far his sagacity looked ahead, and how clearly he saw the revolution that was coming in the practice of travelling, "Now, lads," he said to his companions, "I venture to tell you that I think you will see the day when railways will supersede almost all other methods of conveyance in this country—when mail coaches will go by railway, and railroads will become the great highways for the King and all his subjects. The time is coming when it will be cheaper for a working man to travel on a railway than to walk on foot. I know there are great and almost insurmountable difficulties to be encountered; but what I have said will come to pass as sure as you now hear me. I only wish I may live to see the day, though that I can scarcely hope for, as I know how slow all human progress is, and with what difficulty I have been able to get the locomotive introduced thus far, notwithstanding my more than ten years' successful experiment at Killingworth." And here we may notice the special feature of Stephenson's merits in connection with the establishment of the railway system. The others, Trevethick, Hedley, Blenkinsop, and many men of genius besides, made improvements of various kinds in the engines. He alone saw the immense importance of the subject, the whole scope of the mighty change he was working to effect.

STEPHENSON'S FIRST RAILWAY WORK.

The plain simple honesty of Stephenson was shown when the question arose whether cast iron or wrought iron rails were to be used. Stephenson strongly recommended wrought iron as more durable, while cast iron rails would not bear the weight of the engines, and would be constantly requiring repair, as he knew by experience at Killingworth, though he plainly declared that this advice was $2,500 out of his pocket; for he was interested in a patent for cast iron rails, taken out with Mr. Loch, in 1816. Loch, indeed, was very angry on this occasion, declaring that Stephenson ought to have recommended the cast iron rails, in the interest of the partnership; but that was not "Geordie's" way of looking at things. The Stockton and Darlington Railway was at length opened with considerable ceremony, a long procession of wagons being formed into a train on the railway, preceded by a man on horseback carrying a flag whereon was inscribed the motto, "*Periculum privata utilitas publica;*" and then came George Stephenson himself, driving Number One engine, appropriately named the "Locomotion." The long train crowded with passengers, weighed ninety tons; yet Stephenson, after sending the banner-bearer out of the way, drove it up to a speed of fifteen miles an hour. The opening was a triumphant success; and a few days after, the first passenger carriage, Stephenson's "Experiment," a vehicle like a caravan, was put upon the line,—constituting for a time the whole passenger rolling stock of the first public railway in England.

Some time before, Stephenson had conceived the idea of setting up a factory for the construction of locomotive engines. He had a capital of $5,000, chiefly made up from the present the coal-miners had made him for the "Geordie lamp." Mr. Pease, who by this time had unbounded confidence in him, advanced $2,500; and Mr. John Richardson did the same. From these small beginnings originated the great factory in Forth Street, for some years the one establishment which turned out thoroughly efficient workpeople. Stephenson showed a preference for those who, like himself, hailed from Northumberland. "He could engineer matter very well," he said, "but his greatest difficulty was to engineer men."

MANCHESTER AND LIVERPOOL RAILWAY.

The Stockton and Darlington line, with the opposition it encountered, was a very small matter in comparison to the large enterprise now taken in hand, and the organized resistance offered to it; the foremost enemies being among the richest and most influential men in the land. For the project of a railway between Manchester and Liverpool was again mooted, and the thousand and one interests that declared themselves injuriously affected were up in arms. Mr. James, the surveyor, who early enlisted the help of Stephenson, was subjected, with his assistants, to such various kinds of violence, that one would have thought they were a company of spies come to survey the weak points of the land with a view to a hostile incursion, rather than peaceable men of science anxious to bestow a great and signal benefit upon their country. The Earls of Derby and Wilton were furious when it was proposed that the line should pass through their estates, and organized gangs of keepers, clodhoppers, miners, and other enlightened persons to waylay, harass, beat, and utterly put to rout the surveyors and their assistants. Bradshaw, the canal agent of the Earl of Bridgewater, who saw in the proposed iron road a powerful rival to the Bridgewater canal, on which the cotton was carried from Liverpool to Manchester, often taking weeks upon weeks to arrive at its destination, came loyally to the assistance of Lords Derby and Wilton with his canal men and barges, and threatened Stephenson with a ducking at their hands. Never was a survey of a line of country made under greater difficulties; no wonder it was somewhat imperfect; the marvel was how it was completed at all. "The Canal Companies," wrote Mr. James, "are alive to their danger; I have been the object of their persecution and hate; they would immolate me if they could; but if I can die the death of Samson, by pulling away the pillars, I am content to die with these Philistines. Be assured, my dear sir, that not a moment shall be lost, nor shall my attention for a day be diverted from this concern, which increases in importance every hour, as well as in the certainty of ultimate success."

And as the survey was brought to a close, and the time drew near for seeking the necessary powers from Parliament for the new railway, all the opposing forces were set to work with tongue and pen, in the hope of creating an invincible prejudice against the scheme and crushing it at once. From the *Quarterly Review* downwards, which attacked the idea in all the moods and tenses of vituperation, the Tory press set up a howl, and shouted "Anathema!" The most terrible consequences, agricultural, pastoral, social, and moral, would result from this iniquitous and unnatural means of progression. Horses would first deteriorate, then

diminish in number, and finally become extinct in England—for what would be left them to do? The sparks from the passing engine would assuredly multiply conflagrations. Houses would be set on fire, the country would be lighted up by flaming corn-and hay-ricks; but this latter calamity would be less felt from, because hay would be no longer required when there were no horses left to eat it. Clouds of smoke would pollute the air, even to the breeding of pestilence, and the suffocation of His Majesty's lieges. As for inn-keepers, stage-coachmen, carriage-builders, and all who depended directly or indirectly upon the road for a living, their occupation would be utterly and entirely gone. The only consolation the reviewer saw, afar off, amid this dismal prospect, was in the fact that the railways themselves would never answer, and that the locomotive engines would quickly belie their name by coming to a dead stop. "To speak plain English," says a *Quarterly Reviewer*, "the *steam carriage* may delude for a time, but must end in the mortification of those concerned." And when in 1825 the day came when the Bill for the Liverpool and Manchester Railway was to go into committee in the House of Commons, there was a tremendous forensic body, in all the importance and dignity of silk gowns and awful wigs, ready to fight tooth and nail to turn it out utterly.

OBSTRUCTION—SUCCESS—THE "ROCKET."

Now Stephenson was a man who could work far better than he could speak. To him it was easier to turn to and overcome an engineering difficulty than to explain in good set terms how he would deal with it. Except among his friends, or when warmed by enthusiasm, he was diffident in manner and slow of speech. A pretty time he had of it in the committee room among the gentlemen of the long robe. Sydney Smith said once, in humorous anger against an offender, that he deserved to be "preached to death by wild curates." Stephenson seemed to run some risk of a similar fate, namely, of being questioned to death by wild lawyers. "I was not long in the witness box," he says, "before I wished for a hole to creep out at; I could not find words to satisfy either the Committee or myself. I was subjected to the cross-examination of eight or ten barristers, purposely as far as possible to bewilder me. Some member of the Committee asked if I were a foreigner, and another hinted that I was mad. But I put up with every rebuff, and went on with my plans, determined not to be put down." It was this determination that carried him through, in the fire of an opposition of which this was but the commencement, though the cross-examination lasted three days. To the sapient question, whether if a cow got on to the line, in the way of an engine traveling at nine or ten miles an hour, it would not be a very awkward circumstance, he replied, with a merry twinkle in his eye, "Yes, varry awkward indeed *for the coo!*" The Bill was thrown out; but on the subsequent session a new route having been marked out to avoid encroaching on the domains of Lord Derby and Sefton, the Bill was passed through Parliament, at a cost of $135,000. Stephenson was appointed resident engineer to the company at $5,000 a year, though Mr. Rennie the chief engineer objected, having stipulated that he should have the appointing of the resident officer. A terribly difficult problem awaited Stephenson directly he began his new duties; he undertook to carry the railroad across Chat Moss, a shaking bog, all pulp from the top

to the depth of thirty-four feet, with quicksands, etc., below this. The highest engineering authorities declared that no one but a madman would contend with the tremendous difficulties here presented. But Stephenson persevered, declaring himself certain of success, while the Directors stood aghast at the enormous amount of material swallowed by the insatiable bog, and even the assistants began to look alarmed. He succeeded, and constructed the road across the moor at an expense of only $140,000; whereas Mr. Giles, a scientific engineer, who had criticised his efforts in a very adverse sense, had estimated the cost at $1,350,000.

It was now that he recalled his son Robert from America, to assist in his harassing and arduous labors. His greatest anxiety arose from an opposition that had sprung up, much fostered by Rennie and Telford, against the use of locomotives on the line. But the Stephensons pleaded so earnestly for a fair trial of the system, which they felt convinced was the only one certain of success, that it was at last determined to institute a great competition of locomotives at Rainhill, with a view of ascertaining whether a really practical engine could be constructed. The trial excited intense interest. Four "racers" were entered for the contest: the "Novelty," by Braithwaite and Ericsson; the "Sanspareil," by Timothy Hackworth; the "Perseverance," by Burstall; and the "Rocket," by Stephenson. Everyone knows the issue of that famous competition—how the little "Rocket" bore away the palm from her competitors, and won the prize of £500, besides demonstrating once and for all that economy and efficiency were combined in the use of the locomotive. The brave engine was rather badly treated afterwards, and, like Dibdin's high-mettled racer, set to the unworthy task of hauling sand and gravel. It always showed itself a capital little working engine; and when in the service of Mr. Thompson, the lessee of the Earl of Carlisle's coal and lime works, on one occasion accomplished four miles in four and a half minutes, nearly sixty miles an hour. Stephenson bought it back for old acquaintance' sake; and at length it found a fitting home in the Museum of Patents, at Kensington. It had fulfilled all the conditions laid down by the Company. They were considered very hard at the time; and Mr. P. Ewart, of Liverpool, who afterwards became Government Inspector of Steam packets, declared "that only a parcel of charlatans could ever have issued such a set of conditions; that it had been *proved* to be impossible to make a locomotive engine go at ten miles an hour; but if it ever were done, he would undertake to eat a stewed engine wheel for his breakfast." That gentleman ought to have died of indigestion.

IMPROVED ENGINES—LONDON AND BIRMINGHAM RAILWAY.

Stephenson was not the man to rest content with a great success. He constructed other engines, each exhibiting an improvement on its predecessors, the "Planet," the "Samson," and others. The landed proprietors continued their obstruction to the extension of the railway system; but gradually this obstruction took the form of excessive demands for compensation rather than unmitigated opposition. The great landlords were not unwilling to consent to having the value of their estates greatly augmented, and the rents obtainable for farms considerably heightened, by the increased facilities offered by railways for the transfer of produce. Indeed, some country magnates were found patronizing a rival line between Manchester and Liverpool, on condition that it should pass

through their property; but they demanded enormous compensation for the grievance of having their property thus improved; and the possession of the land put them in a position to extort, in some cases, from six to ten times the marketable value of the ground required by the railway companies. Where the companies were not ready to buy off the opposition of the territorial magnates at exorbitant rates, every device was put in action to get their Bills thrown out in Parliament. In the case of the London and Birmingham Railway, one of the lines set on foot at this period, under the superintendence of Stephenson, the landowners of Hertfordshire and Bucks organized themselves into a complete phalanx, convened public meetings to prove that railways were unnecessary—one eloquent gentleman declared them to be directly opposed to the Spirit of the Constitution—and resorted to the old device of physical force against the surveyors, who were reduced to prowl about with dark lanterns and do their work at night, and to surround themselves with a protective force of strong armed supporters, where actual violence was apprehended. When it was proposed to extend the railway system beyond the manufacturing centres, the country gentlemen were more angry than ever. These new fangled and revolutionary roads would subvert the British constitution and disturb the foxes. Bold Colonel Sibthorp was especially emphatic in denunciation of the infernal railways, and declared that he would as soon meet a highwayman or a burglar as a surveyor. In various instances also great and unnecessary expense was incurred through the opposition of the dissatisfied. Even in some towns the inhabitants, stirred up by the local press, and impressed by dismal forebodings uttered at public meetings, arrayed themselves on the side of the opponents of progress. Thus the stipulation of the inhabitants of Northampton that the Birmingham Railway should not come near their town entailed the necessity of making the celebrated Kilby tunnel, over which one contractor broke his heart, and which was ultimately completed by Robert Stephenson at an expense of $1,750,000. Maidstone also insisted on being left untouched by the Dover Railway, though afterwards it clamored for a branch; and the Watford tunnel was constructed that the precincts of the parks of Lords Clarendon and Essex might not be profaned by the neighborhood of the leveling railway. The annals of the House of Lords form a curious and instructive record of panic, of obstructive tendencies, grandfatherly legislation, and in some cases of amusingly extensive selfishness, thinly covered by an assumption of anxiety for the protection of the public against the wiles of dangerous promoters of chimerical schemes. One influential nobleman "doubted whether an impetus to manufacturers would be advantageous to the country." A sapient Member of Parliament publicly expressed a benevolent wish that the concoctors of every such (railway) scheme, with their solicitors and engineers, were at rest in Paradise. When flat opposition proved vain, and it became very certain that railroads would be constructed, the feudal resistance of the reactionists notwithstanding, a new feeling was manifest, showing itself in a laudable desire to make the railway interest pay for its whistle. The sum of $500,000 for a gravel pit paid to one person of more influence than conscience; $50,000 disbursed to another for consequential damages to a piece of land that became far more valuable through the formation of a railway; large sums paid to landowners as a

compensation for omitting to build accommodation bridges which the landlords were entitled to demand—in one instance a proprietor demanded five bridges, and ultimately found he could do without a single one, accepting a sum of money as an alternative in each case—these were the amenities that strewed the path of the Stephensons and their compeers in the early days of railway enterprise. Added to this, Robert Stephenson had to walk over the whole of the ground between London and Birmingham more than twenty times, in his endeavors to complete his work of laying out the line in the face of the thousand and one obstructions. No wonder that by the time of its completion in 1838, the line had cost $2,500,000 instead of $1,250,000, the original estimate.

But the success of this great railway, one hundred and twelve miles in length, and constructed under such conditions of exceptional expense, that the Bill for its passage through Parliament alone cost $364,250, was such as to return a good dividend to the shareholders the very next year after its opening; for in that first year the receipts for passenger traffic alone amounted to above $3,042,500.

Thus George Stephenson had been closely identified with the Stockton and Darlington Railway, the Liverpool and Manchester (at the opening of which the Duke of Wellington was present, and poor Mr. Huskisson, the ex-President of the Board of Trade, unfortunately lost his life, being run over by the "Rocket"), and the London and the Birmingham line. The soundness of his views, and the sagacity of his calculations, had by this time been abundantly vindicated; and not only were the railways themselves successful, but it was found that various interests which it had been feared would suffer deeply were more flourishing than ever. Coal owners and coal consumers were benefited alike; horses, instead of being a drug in the market, increased in price. The value of land was increased, and farms near railways let for higher prices; and while the coaching and inn keeping interests had certainly suffered, there had arisen entirely new industries connected with the new roads, which found employment for ten men where they threw one out of work.

NEW SCHEMES—STEPHENSON'S SAGACITY.

Stephenson's ideas expanded as the success of railways became more and more established; and he desired to see the capitals of England and Scotland brought into communication by the iron road, and to extend the benefits of his invention to each part of the United Kingdom. He accordingly made surveys between Newcastle and Edinburgh, and took an active interest in the new projects as they were successively brought forward. But in the interval between 1838 and 1844 there was a lull in railway enterprise. The manufacturers, coal owners and iron masters had obtained the lines they immediately required; and the general public had not yet taken up railways as an investment. And when, in 1844, the desire for speculation in railways awoke almost suddenly and developed with astonishing rapidity, Stephenson had retired from the active exercise of his profession, gradually transferring to Robert, the son for whom he had done so much, and who had so fully repaid his fatherly care and nurture, the offices he held as consulting engineer, etc., on various lines. It is infinitely pleasant to see how harmoniously the famous father and the eminent son worked together, and how naturally

the younger man gradually took the burden from the honored parent whose great life work was almost finished. Robert Stephenson's handsome office in Great George street, Westminster, became one of the great centres of railway activity. His father frequently came to the office, but did not always quite know what to do with himself. His spirit was as vigorous as ever, and even some of the spirit of boyish fun that had prompted his athletic efforts in earlier days remained with him. It is known that quite late in life he would invite his friend Mr. Bidder to a friendly wrestling match in a room of the office; and a bill for $12.50 for the repair of broken chairs, jocularly sent to him by his son Robert, testifies with what energy the primitve pastime must have been carried on. He was regarded with the greatest affection and with a respect that amounted to veneration by Robert Stephenson, who attributed all his own success in life to the grand old man of whom he was intensely proud. "It was his thorough training," he once said emphatically to Mr. Smiles, "his example, and his character that made me the man I am."

One great characteristic about George Stephenson was the entire simplicity and manliness of his character. On the one hand there was no ostentatious or aggressive humility about him; he was no "Josiah Bounderby of Coketown," bragging of his humble origin, to excite wonder and gain praise for his material success; on the other hand there was no upstart pride, no weak endeavor to conceal the fact that he was emphatically a working man, and self-educated. In his earlier days he was always noticeable as a man thoroughly to be depended on, and sure to rise in the world. When prosperity came, and with it the necessity of taking his place among men who had begun life at a far higher level than he had started from, he came among them with quiet, modest self-possession, commanding respect as one of nature's noblemen. His power of conversation was marvelous. His observation, his strong common sense, and an intelligent interest in a great variety of objects, from birds-nests upwards, gave a charm to his talk; and often a dry, humorous saying of his would envelope a world of meaning. Thus he declared he distrusted competitive examinations because they would lead to an unlimited power of cram—adding, "Let me give you one piece of advice: *Never to judge of your goose by its stuffing!*" Actively benevolent he was, with a hand always open to help the poor. A brother-in-law of his first wife died, leaving a large family unprovided for. The poor orphans had nothing but the workhouse before them; but, as a north-country admirer forcibly expressed it, "George struck in faither for them." On one of his visits to Newcastle, after shaking hands with Mr. Brandling, an old friend, he shook hands also with a still older friend, Anthony Wigham, his coachman. In the latter part of his life he was involved in a controversy, in which his strong good sense again appeared conspicuous. A new school arose, that of the *fast engineers*, who frequently aspired rather to originality than to practical usefulness; but Stephenson steadily held to his own principles, and declared that every engineering work should be made to pay. Thus he persistently advocated the narrow gange, the space of 4 ft. 8½ in. between the rails, in opposition to Brunel's more ambitious broad gauge, as displayed at considerable cost to the shareholders in the Great Western and the A. & G. W. Railways.

In his beautiful country house at Tapton, about a mile from Chesterfield, he passed his last years, occasionally visiting London, to visit friends, or "to see what there was going on;" Newcastle, and the scenes of his old colliery life, Killingworth and its neighborhood were also dear to him; and into many a cottage whose occupants he had known in the olden times he would enter, with his cheery greeting of "Well, and how's all here to day?" In 1847, the year before his death, he was invited, not for the first time, to Drayton Manor, the seat of Sir Robert Peel. He was to be present at the opening of the Trent Valley Railway, the first sod of which had been cut by Sir Robert two years before, but which Stephenson himself had projected and planned many years earlier. In the same year he invented a new self-acting brake; and in the same year he told the story of his life at a meeting of the Leeds Mechanics Institute. On the 12th of August, 1848, after a short illness, he died, in the 67th year of his age, leaving behind him a name second to none, in that class of distinguished men who, rising from the ranks, attain to eminence and fame by dint of sheer genius, force of character, and hard work.

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AND

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1882.

BRIEF SKETCH OF VICTORIA.

Only child of the Duke of Kent and grand-daughter of George III. Born 24th of May, 1819. Ascended the throne 20th of June, 1837. Married Albert of Saxe-Coburg, 1840. Children—four sons and five daughters.

Just after the eighteenth birthday of Princess Victoria, and immediately on the death of King William, 20th of June, 1837, the Archbishop of Canterbury and the Lord Chamberlain set off for Kensington Palace, where the Princess resided with her mother. They arrived at five o'clock in the morning. In a few minutes the young Queen appeared in a loose dressing gown and shawl, her hair falling over her shoulders, with tears in her eyes, though perfectly collected and dignified. Victoria inaugurated her reign, like the young King of Israel, by asking the Most High to give her an understanding heart. On receiving a letter from Queen Adelaide announcing the death of the king, the young Queen having written a reply, directed it "To the Queen of England;" her maid of honor observed, "Your Majesty, *you* are Queen of England." "Yes," she replied, "but the widowed Queen is not to be reminded of the fact first by me." Later in the morning Lord Melbourne, the Prime Minister, and the other high dignitaries assembled in the council-chamber, when the young Queen entered with her mother, and with perfect self-possession addressed her council. Every one hoped that she would prove all they could desire, and that hope has been realized.

Her Majesty dined in state with the Lord Mayor, and in her progress through the city met with the most enthusiastic reception. At her cornation, which took place on the 28th of June, 1838 as she walked up the nave of Westminster Abbey, her slight figure seemed oppressed with the weight of her embroidered robes, for she was frequently seen to raise her hands to lift the load from her shoulders. Those were eventful moments for the young sovereign when, kneeling and resting her hand on the Bible, she took the coronation oath, and when, the Archbishop placing the crown on her head, the people with loud and repeated shouts cried, "God save the Queen." Two hundred and forty-five peers of the realm were present; among them the Duke of Wellington and Earl Grey, who, when they kissed Her Majesty's hand, were loudly cheered.

An incident occurred which called forth the loudest plaudits. As the venerable Lord Rolle, feeble from age, ascended the steps, he stumbled and fell, on which Her Majesty immediately rose and extended her hand to him, expressing a hope that he had not suffered. The members of the House of Commons exhibited their loyalty by cries of "God save the Queen," the shouts being taken up by the multitudes in the galleries, till the vaulted roofs and arches of the old cathedral rang with one universal

cheer. On her return, wearing her crown and carrying her sceptre, many a voice cried aloud, "God bless her." Rumor soon pointed to the German Prince Albert, who was present at the ceremony, as the future consort of the young Queen. He was born at the castle of Rosenau, where he was most carefully educated under his father's supervision till he entered the university of Bonn, which he had just quitted.

At a grand civic banquet given in Guildhall to the illustrious visitors who had come over to attend Her Majesty's coronation, Marshal Soult, the Duke of Wellington's antagonist in many a hard-fought battle, was present. On the health of the two great generals of England and France being proposed, they together acknowleged the compliment—an interesting incident, exhibiting the friendship existing between the two countries which has ever since happily endured.

During the early part of the Queen's reign Lord Melbourne was Prime Minister, that high office being filled in succession by Sir Robert Peel, Lord Palmerston, Lord Derby, Mr. Disraeli, Mr. Gladstone, again by Mr. Disraeli, and now by Hon. Wm. E. Gladstone, who is doing gigantic work to effect much needed reforms.

On the 16th of January the Queen announced on opening Parliament her purpose of allying her-elf in marriage with Prince Albert of Saxe-Coburg and Gotha, Her Majesty adding, "I humbly implore that the Divine blessing may prosper this union, and render it conducive to the interests of my people." The Prince was naturalized and granted $150,000. The marriage took place on the 10th of February, 1840. Soon afterwards Prince Albert advocated the extinction of the slave trade, and soon earnestly engaged in all philanthropic and noble objects.

The Princess Royal and Edward Prince of Wales were born, one to be Empress of Germany the other King of England.

Early in their married life, Her Majesty accompanied by Prince Albert, on board the "Royal George" yacht, visited Scotland, and Louis Phillippe at Cherbourg, where he received the Queen on the shore, and conducted her to the Chateau D'Eu. Thence they visited the King and Queen of Belgians. From this time forward the Queen resided most of her time either at Balmoral in the Highlands, or at Osborne Castle in the Isle of Wight. At both of these places it has been her great pleasure to visit the surrounding poor and carry relief to those she found in distress, while her kind and gentle manner has won their deepest affection.

Sir Robert Peel, Her Majesty's faithful Minister, was riding in the park one day when he was thrown from his horse, and died on the 2nd of July, a few days afterwards, from the effects of his fall, at the age of sixty-two years. The Queen's grief on hearing the news was excessive, her tears flowing unrestrained, and the words she uttered, "I have lost not merely a friend but a father," showed how much she esteemed him.

The Duke of Wellington was a constant visitor to the Great Exhibition. One of his first purchases was a magnificent work of art, which he carried himself to Buckingham Palace to present to his godson Prince Arthur. A year afterwards he who had served England as few other men have served her, died at Walmer Castle, in his eighty-fourth year, on the fourteenth of September, 1852. His funeral, conducted with

military pomp, took place in London, and his remains were interred in St. Paul's Cathedral, next to those of England's great naval hero, Nelson.

To the admirable training the Princess received from her excellent mother England is deeply indebted. The Duke and Duchess of Kent, parents of Victoria, went to reside in Germany. Before however the birth of the Princess Victoria they returned to England, that their child might be born and bred a Briton. In a few months afterwards the Duchess and her infant were deprived of father and husband. "We stood alone," she says, "almost friendless and alone, in a country of which I could not even speak the language. I did not hesitate how to act; I gave up my home, my kindred, my duties, to devote myself to that duty which was to be the sole object of my future life. I have never ceased to press on my daughter so as to gain by her conduct the respect and affection of the people—this I have taught her should be her first earthly duty as a constitutional sovereign." The duke having died deeply in debt, she gave up all his property to the creditors, retaining only her jointure of $30,000 a year.

After watching her daughter with the most devoted care, the Duchess of Kent breathed her last at Frogmore House 16th of March, 1861.

Early in December, 1861, reports of the alarming illness of the Prince Consort produced great anxiety among all classes; he was suffering from an attack of typhoid fever. He had won by his gracious manners, his devotion to the Queen, and his earnest desire to promote the welfare of her people, universal respect and affection. Surrounded by his family, the Princess Alice more especially his constant attendant, and supported to the last by her prayers and loving attentions, soon after repeating the words of the hymn—

"Rock of Ages, cleft for me,"

he breathed his last, on the 14th of December, 1861, in the forty-third year of his age. The Queen herself in her preface to his speeches and addresses faithfully describes the Prince. "He was very handsome as a young man. As it often happens with thoughtful men who go through a good deal, his face grew to be a finer face than the portraits of him promised, and his countenance never assumed a nobler aspect, nor had more real beauty in it, than in the last year or two of his life. Marks of thought, of care, of studiousness, were there, but they were accompanied by signs of a soul at peace with itself, and which was troubled chiefly by its love for others, and its solicitude for their welfare.

When the widowed Queen appears in public she never fails to be received with every sign of the deepest affection and respect.

In March, 1863, the Prince of Wales was united to the Princess Alexandra, daughter of the King of Denmark—a marriage satisfactory to the nation, and every way calculated to promote the happiness of England's future king. The Prince had before paid a visit to Canada. He and the Princess soon afterwards set off on an interesting excursion to the Holy Land and Egypt. The Duke of Edinburgh, our sailor prince, has also made a voyage round the world, during which, though dangerously wounded by a fanatic, his life was mercifully preserved. The marriage

of His Royal Highness with the Archduchess Marie of Russia, while adding to the prince's happiness, will, it is to be hoped, consolidate the friendship existing between England and Russia—a country which since the emancipation of its serfs has made very rapid progress in civilization.

The dangerous illness of the Prince of Wales excited the sympathy of the nation, and thousands with heartfelt joy accompanied the Queen when she went to return thanks at St. Paul's for his recovery, Feb. 27th, 1872.

During the reign of Victoria England has been engaged in a succession of gigantic struggles abroad, out of which, though not without occasional disaster, her vast resources and the bravery of her soldiers and sailors have, under Providence, enabled her to come off triumphant. A few only can be glanced at. In India war has been carried on with the Afghans, Mahrattas, Sikhs, Burmese, and other nations and tribes bordering on her possessions. Armies and fleets also have been sent to China on two separate occasions, and the capture of Chusan, Canton, Nankin, and Pekin induced the Chinese emperor to sue for peace, which being established, great commercial advantages have been secured. The Russians by attacking the Turks led the English to declare war. Troops and ships were sent out to the Crimea. The Alma was fought, Sebastopol bombarded and taken on the 9th of September, 1855, by the British, French, and Sardinians. The year 1857 saw the commencement of the fearful mutiny of the Sepoys in India and the massacre of hundreds of England's sons and daughters. The siege of Delhi, the defence of Lucknow, and many other heroic exploits, and the final suppression of the mutiny by the gallantry and determination of the British generals and troops sent in pursuit of the rebel Sepoys, are the chief events of that period. The well-conducted march to Magdala, under Sir Robert Napier, and the liberation of the prisoners captured by King Theodore, in 1868, and an expedition into Ashantee, also admirably managed, were the last exploits performed by British troops.

Scarcely had the Queen ascended the throne when a rebellion broke out in Canada, which was suppressed by Sir John Cockburn. The province has since enjoyed peace, with the exception of interruptions from raids by Fenians and American sympathizers, and now with the other British provinces of North America forms the vast territory of the Canadian Dominion.

Europe in all directions has endured the horrors of war. It is to be devoutly hoped that the tremendous struggles carried on in Poland, Denmark, Austria, Italy, Spain, the fair fields of France deluged with blood, and the countless horrors which follow in the train of war, will induce the present and future generations wisely to settle their disputes by arbitration, rather than rely on the barbarous and uncertain use of the sword.

The domestic state of England at the time of Her Majesty's accession was far from satisfactory. The lower orders almost everywhere throughout the country were ignorant in the extreme. The minds of thinking people were, however, more than heretofore awakened to the duty of endeavoring to ameliorate the condition of the poor. New cottages have been built throughout the country, and airy lodging-houses. In the

towns the drainage has been improved and the water supply increased, baths and washhouses and drinking-fountains have been established, cemeteries formed outside the towns, numberless hospitals and asylums built. Schools, mechanics' institutes, and other establishments for instructing the poor have been opened in all directions. Ministers of all denominations have become more alive than heretofore to their responsibilities, and the Gospel is preached in ragged churches, theatres, halls, and the open air, and it is to be hoped that by means of the National Education Acts, requiring compulsory education, no English boy or girl will henceforth be destitute of at least the elements of one.

Great improvements have taken place in many towns of the kingdom, in London especially, where wide streets have been opened, the Thames Embankment has been constructed, and magnificent buildings both public and private, have been erected. The old Houses of Parliament having been burnt down were rebuilt in splendid style. The Royal Exchange shared the same fate, and has been restored and beautified by the skill of Westmacott, and a large portion of the Tower of London has been consumed with fire, but also rebuilt.

Hundreds of acres of docks on the banks of the Thames and Mersey have been formed, and Birkenhead and other towns of enormous extent have sprung up, while the increase of manufactories has been prodigious. Railroads have been formed in all directions, and the electric telegraph, invented some time after the Queen's accession, now encircles the globe, while the screw, taking the place of the old paddle-wheel, now propels the ships of all nations and countless merchantmen across the ocean.

Letters, too, can be sent from one end of the kingdom to the other for two cents, and newspapers and book parcels for half that sum, when before 1840 eighteen and twenty-five cents were the ordinary charges This much needed modification emanated from Mr. (afterwards Sir) Rowland Hill. Having done the greatest good to the greatest number, his remains very properly rest in Westminster Abbey.

We have seen a succession of national industrial exhibitions, started in 1851 in the magnificent Crystal Palace in Hyde Park, by the Prince Consort, and numerous other means inaugurated for the encouragement of industry and the advancement of art in the world.

The wealth of the colonial empire of Great Britain has increased a thousandfold. The small inhabited patches in Australia, looked upon as mere convict settlements, have expanded till they have become vast self-governed states, possessed of gold and copper mines, and countless flocks and herds and other sources of wealth, adding at the same time to the commerce and prosperity of the mother country by affording a sure market to her manufactures. The financial transactions of the British Nation, equal those of four nations like our own. Such is English integrity that this vast volume of business is done with five per cent. cash and ninety-five per cent. credit.

The sufferings of the people in Ireland, caused by the failure of the potato crop, and the great famine which was the result, in 1846, drew forth the warmest sympathy from England. Food to the value of upwards

of $4,000,000 was immediately sent over, while the Government in the two following years advanced more than thirty-five millions of money. Enormous public subscriptions were raised and private contributions distributed among them. Between that year and 1850 the Irish Exodus to America as it was called, from the vast amount of emigration, took place.

While the lamented Dr. Livingstone, Sir Samuel Baker, and other gallant explorers have, by penetrating towards the heart of Africa, acted as the pioneers of civilization and Christianity, the Queen's ships have nearly extinguished the slave trade on the West Coast, and are nobly employed in putting a stop on the eastern side of the continent to that most horrible traffic which has depopulated large districts, and brought miseries unspeakable on tens of thousands of the human race.

No sovereign has ever been more deservedly loved than the excellent Queen of England. During her reign the country has made greater progress than in any former period of English history; and although the minds of the people are grievously agitated by religious controversies, efforts such as have never before been known are being made to spread the truths of the Gospel throughout the land, to give the long neglected masses the advantages of education, and to improve their social and moral condition. In every effort for the good of her people the Queen evinces the warmest sympathy, and never fails to offer every encouragement in her power, while not a case of real distress comes before her that she is not anxious to relieve.

Notwithstanding the numberless shortcomings of England, we may yet feel a just confidence that, while ruled by such a Queen, the efforts of the numerous religious and philanthropic men who are laboring for the benefit of the people will not fail of success. Americans can never forget the sincere sympathy of Queen Victoria, and the wreath of flowers placed at her request upon the coffin of our lamented Garfield. Let England prove true to herself, and who shall doubt that a glorious future is yet in store for her?

"England, with all thy faults, I love the still."—COWPER.

HISTORY OF ENGLAND.

THE ANCIENT BRITONS.

An Obscure Beginning.—Very little is known about the history of England until the year 55 B.C. The probability is that the country was peopled by the Celts of Gaul (France)—the name by which it was first known (Albion) being a Celtic word, and the religion of the inhabitants (Druidism) being the religion of Gaul.

Roman Invasions.—In the year 55 B.C., Julius Cæsar crossed over from Gaul with the purpose of annexing Albion to the empire of Rome. After remaining only four days he deemed it prudent to retire. The following year he renewed the attempt, and landed at Deal with an army of 30,000 men. The native chiefs offered a vigorous resistance, but their isolated efforts were in vain. Meeting the chiefs in detail, Cæsar triumphed everywhere. At length the natives formed a general alliance for the purpose of resisting the common foe. But they were too late; the invaders were still victorious and the British chiefs tendered their submission. From this time an incessant guerilla warfare was kept up, until Cæsar, finding his newly acquired territory the reverse of pleasant, laid a tribute upon the people and retired to Gaul.

The Condition of the Britons.—At the time of the first Roman invasion the Britons were in a state of barbarism. The people were split up into a large number of tribes, each of which was governed by an elective monarch. The tribes were mainly engaged in fighting against each other, their principal weapons being javelins, which they hurled from chariots armed with scythes. Most of the people lived a vagabond life, and their dwellings were small and slightly built. The country consisted mainly of forests and swamps, wherein wild beasts were wont to welcome the unwary traveler with open jaws.

Religion.—Druidism seemed to have been a compound of good teaching and bad practice. The people were taught to conjoin their worship of the deities with charity towards all men. Criminals and prisoners (and, failing these, innocent persons) were offered as sacrifices. Their temples consisted of large stone places in circular form, and open to the sun. The oak and mistletoe were considered sacred. Their ritual and ceremonies were guarded with masonic secresy, the penalty of death being enforced against those who imparted the secrets or committed them to writing.

Roman Rule.—For upwards of ninety years after the departure of Julius Cæsar the Roman rule in England was merely nominal. But A.D. 43 the troops of Rome again came into Britain. The natives offered a

long resistance under the leadership of Caractacus (or Caradoc). The surrender of the chief (50) and the destruction of the principal sanctuary of Druidism were fatal to the hopes of those who fought for their country's independence; and though efforts were frequently made to throw off the yoke, Britain became a Roman province.

Withdrawal of Roman Forces.—Greatly benefiting by the presence of their civilized conquerors, the great bulk of the Britons remained subject to Rome until towards the close of the fourth century. Then the Romans who had settled in Britain, deeply interested in the internal and external causes that shook the empire to its very foundation, suffered the soldiers to be gradually withdrawn. Left to themselves, the civilian portion of the Roman settlers might have established an independent government, but they were so split up into factions that the opportunity was lost, and the ties that bound Britain to Rome were broken.

THE SAXONS.

Internal Feuds.—Left to themselves, the Britons reverted to their old habit of fighting among themselves.

Visitors.—The Jutes, Angles, and Saxons made incursions into the country; and though not very successful at first, their ultimate triumph is recorded in the present name of the English-speaking race—Anglo-Saxon. One of the native chiefs (Vortigern) being troubled by his neighbors as well as by foreign enemies, invited two Saxon chiefs (Hengist and Horsa) to come over and help him. They did so, and found the land so much to their liking that they resolved to become its rulers. Vortigern and the British chiefs were assassinated (448).

The Saxon Heptarchy.—Ultimately (the time occupied being from 449 to 626) the country was divided into seven kingdoms—Sussex, Wessex, Essex, and Middlesex (founded by the Saxons), East Anglia, Mercia, and Northumberland (founded by the Angles). These seven kingdoms are known as *the Saxon Heptarchy.*

Independent Britons—The Britons for many centuries maintained their national language and independence in Devon, Cornwall, Cumberland, Lancashire, and Wales.

Religion of the Anglo-Saxons.—The new masters of England worshiped the heavenly bodies, and certain Scandinavian heroes whose prowess it was their chief effort to emulate. The names now employed to distinguish the days of the week are derived from the names of Saxon gods. The Sun, the Moon, Tiu, Woden, Thor, Freye, and Soeter. But an event transpired which was destined to produce an important change.

Introduction of Christianity.—One of the kings of Kent (Ethelbert) married the daughter of a Frank king who professed the Christian faith. Whether from this fact, or because the new Pope (Gregory) was moved by an incident which many years before had drawn his attention to the paganism of England, cannot be exactly determined. But in the year 597 St. Augustine landed at Thanet for the purpose of converting England to Christianity. Ethelbert was baptized, and Augustine was created Archbishop of Canterbury. Some time before the landing of Augustine a

rude form of Christianity (a mixture of Christianity and Druidism) existed among the independent Britons. An effort was made to amalgamate the churches of England and Wales. But even in those days the Welsh were sturdy Nonconformists, and declined to surrender their ecclesiastical independence.

Religious (?) *Wars.*—During the next two centuries the history of the country is mainly a record of conflicts among the several kingdoms of the Heptarchy, chiefly entered into on religious *pretexts.* Sometimes the pagans were victorious, sometimes they were defeated.

Unsettled State during the Heptarchy.—The kingdoms of the Heptarchy were separately too small to insure their peacefulness. What with internal wars and the raids of the irrepressible sea-kings of the north, the country was the arena of perpetual unrest.

THE SAXON KINGS OF ENGLAND.

EGBERT.—*Amalgamation of the Seven Kingdoms.*—To Egbert who became king of Wessex in 800, belongs the distinction of uniting the elements of the national strength. To secure the peace of Wessex, he fought the kings of the contiguous kingdoms, and finally induced a general recognition of his title to the sovereignty of the whole of the country (827).

The Danes.—"In this reign," says an old historian, "the Danes began to infest the land, as thinking they might do as much against the Saxons as the Saxons did against the Britons. But though they made divers invasions and did great spoil, yet were they still repelled." The Danes were in league with the independent Britons. Egbert was defeated in two battles, but in 855 he routed the allied armies of Hengstone Hill.

Death.—He died in 836, and was succeeded by his son.

ETHELWOLPH.—The Danes were again troublesome, but were signally defeated. The king gave one-tenth of the Crown lands to the Church, and freed Church revenues from taxation. He abdicated in favor of his two sons, and died 856.

ETHELBALD (856–860), ETHELBERT (860–866), ETHELRED (866–871).—These reigns were only noted for the continuance of the Danish invasions.

ALFRED THE GREAT was the fourth of Ethelwolph's sons called to the throne.

Alfred and the Danes.—During the first six years of this reign the Danes were masters of the situation, and Alfred's army was disbanded. In 878, however, the remnants of the English army were collected, and the Danes were so thoroughly beaten at a battle near Chippenham, that the Danish king sued for peace. The Danes were restricted to reside in the northern and eastern counties; their army was ordered out of the country, their king (Gothron) did homage to Alfred, and he and his followers were baptized. Alfred took advantage of the time of peace to train the people in military exercises, to build ships, and to fortify the towns. When, therefore, the Danes returned in 893, they met with a warm reception, and in 897 the remnants of their army left the country.

Legislation.—Alfred is conspicuous among the kings, on account of the advances made in the enactment of laws for the promotion of the national welfare. The laws were collected and harmonized in the form of a statute book; the country was divided into shires and hundreds; vagrancy was suppressed; provision was made for the due and impartial administration of justice; learning was encouraged, and freemen were compelled to educate their sons.

Death.—He died 901.

EDWARD THE ELDER, son of Alfred, followed the wise example of his father, and extorted allegiance from the resident Danes, and from the Britons in Wales and Cambria. He died 924.

ATHELSTAN conquered the Britons in Cornwall and the southwestern counties. In this reign the penalty of death was abolished in the case of boys convicted of theft; severe penalties were inflicted for Sunday marketing and debasing the coin. He died 940, and was succeeded by his brother.

EDMUND THE ELDER for a time had to be content with being king over half the country, Aulaf the Dane taking the other. He ultimately gained nominal sovereign rights over the whole. He died 946.

EDRED (brother of Edmund).—Strong efforts were made to subordinate the Crown and Government to the Church by Dunstan, an abbot and chancellor of the kingdom. At one time the king was inclined to give way, but Dunstan alienated a large part of the clergy by attempting to enforce celibacy. He died in 955.

EDWIN, or EDWY, nephew of Edred, strongly resisted the clerical pretentions. Dunstan was banished, and his property sequestered. He, however, returned a few years later, and took part in a rebellion raised in the interests of the king's younger brother, Edgar. Edwy died by violence in 975.

EDGAR.—This reign was remarkable for the absence of insurrection and invasion. The king favored the monkist party. He maintained a large navy; passed a law to suppress drunkenness; and commuted the Welsh tribute, acccepting instead a certain number of wolves' heads. He died in 975.

EDWARD THE MARTYR was assassinated by order of his step-mother (978).

ETHELRED THE UNREADY, the son of Elfrida, then ascended the throne, though strongly opposed by Dunstan.

The Danes again.—In 980 the Danes again invaded England, and in 991 the king purchased their withdrawal for £10,000. This was so satisfactory to the Danes, that they repeated their visits almost annually, each time raising the price of peace, until 1002, when it reached £48,000. The money for these payments was raised by a tax called *Dane-gelt*, which tended greatly to impoverish the country. In 1002 the king ordered a general massacre of the Danes resident in his dominions, which was rigorously carried out. A larger Danish fleet and army than

ever then appeared, under the leadership of Sweyn, king of Denmark, whose sister had been slain in the massacre.

Flight and Recall of the King.—After fighting for eleven years, with varied success, Ethelred was compelled to fly the country—the people submitting to Sweyn and his son Canute. Sweyn died in 1014, and Ethelred was recalled. The struggle between Canute and Ethelred continued until the death of the latter in 1016.

EDMUND (*Ironsides*) —Active and enterprising, the very reverse of his father, the new king fought several battles with the Danes during his brief reign of seven months. The result of the campaign was a compromise similar to that effected in the reign of Edmund the Elder. He died by violence, at the instigation of Canute (1017).

THE DANISH KINGS.

CANUTE.—Canute now became monarch of the whole realm. At first he dealt harshly with the Saxon population; executing the nobility and levying heavy taxes. He soon learned a wiser policy. He married the widow of Ethelred (Emma), and sent home the greater part of the Danish soldiery. His efforts at conciliation were so successful that no insurrection disturbed his reign.

Legislation.—Laws were passed—(1) requiring every person to receive the sacrament twice a year; (2) subjecting the clergy guilty of notorious crime to deprivation.

Death.—Canute died in 1035.

HAROLD.—Harold, the eldest son of Canute, secured the crown, though the late king had named Hardicanute, his son by Emma, as his successor. Civil war was averted by the customary expedient of dividing the country; but Harold at length obtained the entire supremacy.

HARDICANUTE —At Harold's death, in 1040, his half-brother succeeded him. He was very unpopular, and died in 1042 in a state of drunkenness.

End of Danish Rule.—The Danes had been a source of annoyance to England for nearly 250 years. With the death of Hardicanute; the family of Sweyn became extinct, the Danish dynasty came to an end, and Danish invasions became a thing of the past.

THE SAXON LINE RESTORED.

EDWARD (*the Confessor*).—The son of Ethelred and Emma was now recognized by general consent. Having been an exile in Normandy during the period of Danish supremacy, the king had imbibed a fondness for Norman customs. He alienated the affections of the Saxons by his preference for the Norman-French language, and the selection of Normans as his friends. An insurrection fomented by Earl Goodwin was the result, and many of the Normans hastily left the country.

Rival Claimants.—Edward being childless, and their being no survivor of the old line of Saxon kings, two claimants for the succession appeared.

One of these was William, Duke of Normandy, cousin of the king, whose wife was a lineal descendant of Alfred the Great. The other was Harold, a son of the Earl Goodwin. Neither had any valid claim by descent. William alleged that Edward had promised to nominate him as his successor; and Harold having been driven on the shores of Normandy by stress of weather, had been compelled to promise to support the pretensions of the young duke.

Death.—Edward died in January, 1066, having nominated Harold to succeed him.

HAROLD II.—The new king was the son of a man who had raised himself from the ranks. He was crowned without any opposition. Immediately William of Normandy set about preparing an expedition to contest his claim.

The Norman Conquest.—William landed in England September 29, 1066. Harold hastened to meet him, and on October 14, the two armies fought a severely contested battle. Harold, the last of the Saxon kings, was defeated and slain, and England was once more the spoil of the conqueror.

NORMAN KINGS.

WILLIAM I. (*the Conqueror*).—*Submission of the Country.*—The English nobles elected Edgar Atheling, grandson of Edmond Ironsides, as king; but after a short resistance gave in their submission to William, who was crowned at Westminster Abbey, December 25.

Norman Rule.—At first he treated the native population with great consideration. But during his absence in Normandy an extensive conspiracy was formed against him. On his return to England he soon re-established his authority. From this time the people were made to feel that they were a *conquered* people. The high offices in church and state were filled with Normans; the pleadings in the courts were conducted in French; the nobility were deprived of their armor; the inhabitants of towns and villages were commanded to put out all lights and fires at eight o'clock in the evening.

Insurrections.—His conduct provoked many insurrections in England. In Normandy, also, his son Robert rebelled. William, however, was able to put down all opposition.

Death.—During a war with the King of France, William was thrown from his horse, and died at St. Gervas (1087).

WILLIAM II. (*Rufus*).) The Conqueror was succeeded by his second son. To secure his seat on the throne he promised to redress the grievances of his English subjects; this, however, he failed to do. His reign was marked with a rigor even exceeding that displayed by his father. William was killed whilst hunting in the New Forest (1100), and was succeeded by his younger brother.

HENRY I. (*Beauclerc*).—The crown of England should have devolved on Robert, the eldest son of William I., who at the time of his brother's death was in Palestine as a Crusader. Henry, however, was on the spot and took steps to have himself crowned. He promised to respect the

rights of the Church, to lesson the feudal exactions made by the two former kings, and to restore the laws of Edward the Confessor. He also, from motives of policy, married Matilda, the niece of Edgar Atheling. He abolished the use of the curfew bell and relaxed the severity of the forest laws. After much trouble he succeeded in again annexing Normandy to the English Crown. He died in 1135, leaving one daughter, Matilda.

STEPHEN.—Henry had caused his barons to swear fealty to his daughter. But on the king's death, his nephew Stephen, the son of Henry's sister (Adela), induced the Primate to crown him. A civil war ensued, which was terminated on the condition that the son of Matilda should be recognized as Stephen's heir. The chief battle in this reign was the battle of the Standard, fought near Northallerton, between Stephen and David, King of Scotland, who espoused the cause of his niece Matilda. The Scots were defeated with great loss. Stephen died in 1154.

THE PLANTAGENETS.

HENRY II. (*lPantagenet*).—Henry began his reign by banishing the foreigners whom Stephen had imported to help him in the civil wars. He caused 1,100 castles of the nobility and clergy to be demolished and resumed the Crown lands.

Henry and the Church.—Henry having decreed that the clergy offending against the laws should be tried by the civil authorities, his decree was violently opposed by Thomas A'Becket. Becket was persuaded after a long controversy to give a written consent to the new law, but afterwards retracted his assent and opposed the king more than ever. Becket's property was confiscated and he fled the country. After seven years of exile he was permitted to return, and at once excommunicated two bishops who had sided with the king. This so incensed the king that he gave expression to reproaches which induced four of his knights to hasten to Canterbury, where they assassinated the Primate. The Pope was furious, and the clergy eulogized Becket as a martyr; the king did penance at his tomb, and matters were appeased (1162-1170).

Conquest of Ireland.—Backed by a papal bull, Henry annexed Ireland to his dominions.

Wars.—Henry was involved in war with the French and Scots, and his own sons rebelled against him. He succeeded in securing good terms from all, and died in a time of peace (1189).

RICHARD I. (*Cœur-de-Lion*).—After making such arrangements as seemed likely to conduce to the security of his throne, the king departed for the Holy Land in 1190 to join the Crusades.

THE CRUSADES.—The Crusades were a series of campaigns entered into by the Christian nations for the purpose of rescuing the Holy Sepulchre from the Turks. For nearly two centuries the struggle lasted, ending in the triumph of the Turks, At one time or other the sovereigns of most of the European nations personally took part in the Crusades.

Cyprus.—On his way to the Holy Land, Richard dethroned the king, and appointed two of his own knights as his lieutenants.

Captivity of Richard.—On his return from the Holy Land, Richard was imprisoned by the Duke of Austria, detained for over a year, and then liberated only on condition of paying a heavy ransom (1194).

Troubles in England.—During the king's captivity his brother John had tried to form a party to prevent the re-accession of Richard. The conspiracy melted away at once on the king's return. Richard was killed by a shot from an arrow (1199).

JOHN (*Lackland*).—Richard was succeeded by his brother John. The Norman subjects of the English Crown, however, declared in favor of Arthur, son of Geoffrey, an elder son of Henry II.

Loss of Normandy.—In the conflict that ensued Arthur was taken prisoner and stabbed by the king; but ultimately the whole of the provinces of Normandy and Anjou were united to the French Crown.

Quarrel with the Pope.—John quarrelled with the Pope on the question of ecclesiastical preferment. In 1209 the king was excommunicated, and in 1212 the people were absolved from their allegiance to him. John made a most abject submission, and did homage to the papal legate.

War with France.—The king also suffered a humiliating defeat at the hands of the French.

Conflict with the Barons.—Irritated by the lawless actions of the king, the barons of England rose in arms against him, and though the king secured the neutrality of the clergy by making concessions to them, he was compelled to comply with the demands of the barons.

Magna Charta.—At a conference between the king and the barons John signed the *Great Charter of English Liberty.* By this charter it was provided that "no freemen shall be taken or imprisoned, or be disseized of his freehold, or liberties, or free customs, or be outlawed, or be exiled, or any otherwise destroyed; nor will we pass upon him, nor send upon him, but by lawful judgment of his peers, or by the law of the land. We will sell to no man, we will not deny or delay to any man justice or right." The barons were protected from the infliction of arbitrary imposts at the royal pleasure, and freemen or villeins were protected from excessive fines. The corporation of London, &c., were confirmed in their privileges, uniform standards of weight and measure were ordained, and foreigners permitted to trade. This charter was signed at Runnymede, June 19, 1215.

The King's Treachery.—John entered into secret negotiations with the Pope and with foreign mercenary soldiers. The Pope espoused his cause, and several bodies of foreign troops came to the king's assistance. The charter was then renounced, and the horrors of civil war ensued. The troops of the king were so successful that the barons applied to the French king, offering to acknowledge his son as their monarch. A French expedition was, however, rendered unnecessary. John died in 1216.

HENRY III. (*Windsor*).—John was succeeded by his son Henry, who at that time was only nine years of age. The Earl of Pembroke (uncle

of Henry) was appointed Protector of the realm during the king's minority. The barons who had been in alliance with the King of France against John were now in a dilemma. The Earl of Pembroke took steps to conciliate them by confirming MAGNA CHARTA The cause of Louis was deserted, and at a battle fought near Lincoln that prince was defeated and compelled to retire. The Barons were now in accord with the Protector and the Crown.

The Protectorate.—Pembroke died in 1218, and was succeeded by the Bishop of Winchester.

Foreign Influence.—The king adopted the policy of inviting foreigners to his court, and placing them in offices of honor and emolument. They were regarded with jealousy by the English barons and the people generally, and were the cause of many conflicts between the king and the barons.

Simon de Montfort.—The violations of Magna Charta became so unbearable that Simon de Montfort, Earl of Leicester, succeeded in maturing a project for depriving the king of the reins of power. A fitting opportunity was found upon the occasion of the king's convoking his barons to grant him supplies for carrying on a war with Sicily. The barons refused to vote supplies until the king consented to redress grievances. This he promised to do, and various measures were agreed to for the good government of the realm. A council of state, consisting of twenty-four barons, was formed. One of their first acts was to expel all foreigners from office. The barons in power were not so zealous for the liberties of the people as formerly. Dissatisfaction arose. The king took advantage of this to attempt to recover his former powers. Allying himself with the King of France, and supported by the Pope, Henry was so far successful that Leicester was obliged to flee for his life. At length both parties agreed to refer all questions in dispute to the friendly offices of the King of France, who decided mainly in favor of Henry. The party of the barons being dissatisfied, again took to arms, and at the battle of Lewes took Henry and his brother prisoners (1264). The following year, however, Prince Edward defeated the barons at Evesham, Leicester and his sons being slain.

House of Commons.—To Leicester belongs the honor of establishing the House of Commons. He summoned a parliament, to which, in addition to the barons and ecclesiastics previously summoned to the great councils of the realm, he summoned two knights from each shire, and two burgesses from each borough in the realm (Jan. 20, 1265).

Death.—Henry died in 1272, in the fifty-seventh year of his reign.

EDWARD I. (*Longshanks.*).—At the time of his father's death Edward was in the Holy Land as a Crusader, and was not crowned till 1274.

Conquest of Wales.—After a seven years' war (1276-83) Wales was subdued and incorporated with England; the infant son of the king, born at Carnarvon, being created Prince of Wales.

Scottish Affairs.—On the death of Alexander III., two competitors claimed the Scottish crown, and Edward was requested to decide the dispute. He awarded the crown to John Baliol, who swore fealty and homage to the crown of England. Shortly afterwards Baliol renounced

this allegiance, but being defeated by Edward at Dunbar he was carried to London as a prisoner, and resigned his crown to Edward, who appointed Warrenne Governor of Scotland. The Scots, unwilling to become an English province, found a worthy leader in William Wallace who defeated Warrenne and ravaged the northern English counties. At the battle of Falkirk (1298) Edward routed the Scots, and Wallace, after wandering about as a fugutive for over six years, was betrayed into the hands of the English, and executed as a traitor. Robert Bruce then assumed the crown of Scotland, and ejected the English from the country; but he also was subsequently defeated and compelled to retire.

Edward's Government.—The wars of the king involved a large expenditure, and he attempted to impose taxes arbitrarily, but the resistance of the barons obliged him to confirm the provisions of Magna Charta. The laws were generally improved and administered justly, but severely.

Death.—Edward died in 1307, while preparing for another invasion of Scotland.

EDWARD II. (*Carnarvon*).—This reign was marked by discontent and civil war, caused mainly by the promotion of unworthy favorites to offices of trust and honor. The Earl of Lancaster was the leader of one of these rebellions, and in 1322 he was captured by the king's troops and beheaded.

Bannockburn,—In 1314 the Scots regained their independence, their army under Bruce defeating the English army at Bannockburn.

The King's Death.—After the execution of Lancaster a new coalition was formed against the king, his queen and her paramour (Mortimer) heading the malcontents. Edward was taken prisoner, and in 1327 was murdered in Berkeley Castle.

EDWARD III. (*Windsor*).—The king being only fourteen years of age, the Earl of Lancaster was appointed Protector.

The Fate of Mortimer.—During the minority, Mortimer made himself obnoxious to the great body of the nobility, several of whom he caused to be executed upon various pretexts. In 1330, however, Edward with a few followers surprised him at Nottingham Castle, and had him hanged at Tyburn.

Wars.—This king was generally at war. Scotland and France alike felt the force of English arms. The son of Edward, known as the Black Prince, greatly distinguished himself. The chief battles fought against the French were Crecy (1346), Poitiers (1356). After a long siege Calais surrendered to the English; the old inhabitants were exiled, and the city was colonized by the conquerors.

Government.—The power of parliament greatly increased in this reign, partly owing to the fact that the king consulted it in reference to his wars. An act was passed forbidding the payment of Peter's pence, and the carrying of appeals to Rome; and for the regulation of the food, wages, and clothing of the different classes of the population.

Death.—Edward died in 1377, the Black Prince having died in the previous year.

RICHARD II. (*Bordeaux*).—The king was the son of the Black Prince, and eleven years of age at this time.

Poll Tax.—A parliamentary impost of three groats upon every person above fifteen years of age led to many serious riots. A rebellious multitude, led by Wat Tyler, marched into London, committing great damage to life and property. At an interview with the king, Tyler behaved very insolently, and was struck down by Walworth, Lord Mayor of London, and killed. The king pacified the rebels, who were induced to return to their homes. Many of them were afterwards executed.

France and Scotland..—Affairs with these countries still remained unsettled.

Successful Rebellion.—Henry, Duke of Lancaster, aspired to the crown and took Richard prisoner. The king was formally deposed by parliament, and Lancaster claimed the crown under a pretence of right of succession. Henry died (or was killed) at Pomfret Castle (1400),

HOUSE OF LANCASTER.

HENRY IV. (*Bolingbroke*).—Henry, Duke of Lancaster, was placed on the throne September, 1399. Efforts were made to oust him from the throne, but without avail.

Government.—Henry increased the power of the clergy, which for some time had been decreasing, and gave them power to order the burning of heretics. The first to suffer under this new law was William Santre (1401.)

Death.—Henry died in 1413, and was succeeded by his eldest son.

HENRY V. (*Monmouth*),—Henry V. was soon engaged in putting down opponents. Lord Cobham and the Lollards were easily put down, and a conspiracy to place the Earl of March (the real heir) upon the throne was nipped in the bud.

Invasion of France.—Henry then invaded France, and at the battle of Agincourt (1415) gained a brilliant victory.

Death.—The king died in the midst of his wars (1422), and was succeeded by his only son, at that time scarcely nine months old.

HENRY VI.—For the first time parliament assumed the right of appointing rulers during the king's minority, and the Duke of Gloucester was appointed Protector.

Reversals in France.—During this reign the English were several times defeated in battle, and finally, with the exception of Calais, the English possessions in France were taken from her.

The Wars of the Roses.—At home the power of the House of Lancaster was not universally acknowledged. Richard, Duke of York, a descendant of Edward III., began to put forth his claims. In 1455 a civil war broke out—a war which lasted many years, and which is known as the War of the Roses—the Yorklst ensign being a white rose, and that of the Lancastrians a red rose. The king's friends were defeated at St. Albans and at Northampton, after which it was arranged that Henry should reign during his life, and that the crown should afterwards devolve on the Duke of York and his heirs. Margaret of Anjou, the queen, however, rallied the Lancastrians, and the Duke of York was slain at Wakefield Green (1460). Edward, son of the Duke of York, won the next battle at Mortimer's Cross; but a few days later Margaret reversed the defeat at the battle of St. Albans. Henry, however, was dethroned and succeeded by the Duke of York (1461).

THE HOUSE OF YORK.

EDWARD IV.—*The Wars of the Roses.*—The Lancastrians were defeated in battle at Towton, Hedgeley Moor, and Hexham; and Henry was imprisoned in the Tower. The Earl of Warwick, who had been the chief support of the Yorkists, deserted their cause and went over to the Lancastrians. Edward fled to Holland, but shortly returned and at the battle of Barnet gained a victory and returned to the throne. Prince Henry and his father were assassinated.

Death.—Edward died in 1483, leaving two sons, Edward and Richard, and five daughters.

EDWARD V.—The young king (aged twelve) was not suffered to enjoy the honors of royalty for a lengthy period. His uncle Richard, Duke of Gloucester, having assumed the Protectorate, began to pave the way for his own accession to the throne. After procuring the execution of the most powerful friends of the king, the king and his brother were smothered in the Tower.

RICHARD III.—After an assumed reluctance Richard accepted the crown. But the nation did not acquiesce in his usurpation. A project was formed to unite the Houses of York and Lancaster against Richard, by a marriage between Henry Tudor, Earl of Richmond, and Elizabeth of York, the heirs of the two parties. The proposal met with great favor. An insurrection headed by the Duke of Buckingham was, however, easily put down, and Buckingham was beheaded (1483). Two years later Richmond landed at Milford with a small army. Richard hastened to meet him. The rival armies met at Bosworth Field, near Leicester. The king and the earl fought with great bravery, but in the end Richard was slain (August, 1485).

THE TUDOR PERIOD.

HENRY VII.—Henry was crowned, and shortly afterwards married Elizabeth of York, daughter of Edward IV.

Rebellions.—(1) *Lord Lovel* and others in 1486 attempted a rebellion, but the attempt was nipped in the bud. (2) Then one *Lambert Simnel*, professing to be Richard, Duke of York, who had escaped assassination in the Tower, got much support in Ireland, where he was proclaimed king but was taken prisoner at the battle of Stoke (1487), and made scullion of the king's kitchen. (3) The insurrection of *Perkin Warbeck* occupied the attention of the country for six years. The pretence of Warbeck was of a similar character to that of Simnel. Ultimately he surrendered to the king's mercy and was imprisoned in the Tower; but engaging in fresh plots he was hanged (1489).

The King's Exactions.—Henry was of a miserly disposition. He raised large sums for the purpose of engaging in a war with France; but instead of fighting he consented to peace on receipt of a large sum of money from the French king. Every attempt at insurrection was made a pretext for extorting money from his subjects. He also raised great sums of money from offenders against penal laws.

Death.—He died in 1509.

HENRY VIII.—The son of the late king, the heir of York and Lancaster, now ascended the throne.

War with France.—In 1513 Henry invaded France and gained the battle of Guinegast, commonly known as "the battle of spurs," and afterwards captured Tourney. A peace was made in 1520.

CHARLES I.—Charles soon came into conflict with his first parliament, which consisted mostly of Puritans, who entertained a great dislike to the queen, who was a Roman Catholic. Being about to engage in war, the king applied to parliament for the necessary supplies but only about one-tenth of the sum asked for was voted. The king dissolved parliament, and proceeded to exact a forced loan, called "benovelence," (1625).

His Second Parliament was no better to manage. Instead of granting him money, they proceeded to impeach Buckingham, the king's favorite adviser. Charles dissolved the parliament, and continued to raise money illegally.

His Third Parliament, which met in 1628, refused supplies until Charles assented to the Bill of Rights.

The Bill of Rights enacted that the king should levy no taxes without the consent of Parliament, that soldiers should not be billeted in private houses, and that no one should be detained in prison without trial. The provisions of the Bill were violated by the king, (1) by the establishment of illegal courts, and (2) by the revival of the obsolete *Dane-gelt*, under the title of *ship-money* (1634).

The Long Parliament met in 1640. The Earl Strafford and Archbishop Laud were impeached and executed. In 1642 the king ordered the arrest of five prominent members of the House of Commons for high treason, including Hampden, who was one of the chief opponents of ship-money. The House refused to surrender them and they escaped. An Act was passed vesting the command of the army in parliament instead of in the king.

Civil War broke out in April, 1642. At Edge Hill, Newbery, Marston Moor, and Naseby, battles were fought between the king's forces (called Cavaliers) and the partiamentary army (called Roundheads). The Scots, whose dispute with Charles was mainly on religious grounds, allied themselves with the parliamentarians, and surrendered Charles, who sought an asylum with them, to his English opponents.

Pride's Purge.—The parliament itself was divided into two parties—the Presbyterians, who wished to *limit* the king's authority; and the Independents, who sought to *destroy* it. On December 6, 1648, the House was to decide on the disposal of Charles. Colonel Pride, with three regiments of soldiers, prevented the Presbyterian members from entering, and the remainder, known as "The Rump," ultimately ordered that Charles should be tried for treason against the people.

Trial and Death.—Charles's accusers were his judges, and of course he was found guilty. He was beheaded at Whiteball (1649).

THE COMMONWEALTH.—The "Rump" now voted the abolition of the monarchy and the House of Lords.

Oliver Cromwell was now the foremost man in England. As Lord General of the army, he soon acquired enormous power.

The Royalists of Scotland proclaimed the son of Charles as king; but their army was beaten at Dunbar, 1650, and in 1651 at Worcester. Charles fled to France.

Cromwell and Parliament were soon at variance; and 1653, the General, with three hundred troops, ejected the members from the House *and pocketed the* key. A new parliament, known as the Barebones *Parliament, was called* by Cromwell, but met with no general support.

In 1657 Cromwell was installed as Lord Protector. He tried the effect of summoning another parliament, but a quarrel resulted in its dissolution, His home rule was of an arbitrary character. He was feared, but hated, and lived in constant dread of assassination.

Foreign Policy.—Cromwell took an active interest in continental affairs, and greatly raised the prestige of England.

Death.—He died September 3rd, 1658.

Richard Cromwell succeeded his father as Lord Protector, but resigned at the end of five months. A new parliament and the army united to restore the monarchy.

THE STUARTS RESTORED.

CHARLES II. landed in England in May, 1660. The army of Cromwell was disbanded, and some of the "Regicides" were executed. The Life Guards, the first nucleus of a standing army, were established.

Religious Affairs.—The Episcopal Church was restored in England and Scotland. The Act of Uniformity, requiring that all preachers should receive episcopal ordination, and use the Book of Common Prayer, resulted in the deprivation of two thousand ministers (1662).

Great Plague and Fire.—In 1665 about 100,000 of the inhabitants of London died from plague, and in the following year about 13,000 houses and 89 churches were destroyed by fire.

Dutch War.—From 1665 to 1667 England was at war with Holland, and in the latter year the Dutch fleet sailed up the Thames as far as Tilbury. The war was renewed in 1672, lasting till 1678.

Alleged Popish Plots.—It was generally believed that the great fire was the work of Romish incendiaries. Many Roman Catholics were executed for alleged plots against the king. The king himself was suspected of favoring Romanism, while his brother James was an avowed Romanist. In 1673 the *Test Act* was passed, requiring State and municipal officers to repudiate certain Romish doctrines.

A Protestant Conspiracy was formed for the purpose of securing the crown for the Duke of Monmouth, a natural son of Charles. It was frustrated, and the leaders executed (1683).

The Habeas Corpus Act was passed in 1672, to secure the carrying out of Magna Charta and the Bill of Rights, in reference to a speedy trial of prisoners.

Death.—Charles died in 1685, and was succeeded by his brother.

JAMES II.—An insurrection in favor of Monmouth was put down (1685).

The Trial of the Seven Bishops for treason because they refused to read a royal indulgence dispensing with the requirements of the *Test Act*, resulting in their acquittal, to the great joy of the nation. James gradually ousted the Protestants from their offices, and replaced them by Romanists, in Defiance of the Test Act.

The Glorious Revolution.—James's government became so intolerable that William, Duke of Orange, James's son-in-law, was invited over to take the throne. James fled the country, and was declared by Parliament to have abdicated, A new Parliament was elected, which declared the crown to be settled on William of Orange and his wife Mary, they assenting to the Bill of Rights, and promising to maintain the Protestant religion *(1688).*

WILLIAM III. AND MARY II.—In England there was a general assent to the Revolution, but in Ireland and Scotland a fierce but ineffectual struggle was made on behalf of James.

Legislation.—The Triennial Bill limited the duration of Parliament to three years. The Civil List Bill fixed the sum to be annually paid to the sovereign. The Act of Settlement provided that the judges should not be removed except for bad conduct; that the sovereign should not leave the country without the consent of Parliament; and that none but Protestants should fill the British throne (1701).

Death.—Mary died in 1696, William in 1702.

ANNE.—Anne, sister of Mary, was the next monarch.

War with France.—Under the command of Churchill (afterwards Duke of Marlborough), the English army successfully fought against France, capturing Gibraltar, and defeating its opponents at Blenheim (1704) and other places. Peace was restored in 1713.

Union of Scotland and England.—This union was cemented by the amalgamation of the English and Scottish Parliaments, and the throwing open of British ports and colonies to Scotch traders (1707).

Death.—Anne died in 1714, the whole of her nineteen children dying before her.

HOUSE OF BRUNSWICK.

GEORGE I., the Elector of Hanover, great-grandson of James I., succeeded Anne.

Whigs and Tories.—Many members of the Tory party manifesting a feeling in favor of restoring the son of James II., George allied himself with the Whigs, and several of the Tory leaders were impeached.

The Pretender.—This name was given to the Stuart heir by the Whigs. He came over from France and landed at Peterhead in 1715, but he soon abandoned his friends to their fate, and twenty-two of them were executed and 1,000 banished.

Death.—George died in 1727, and was succeeded by his son.

GEORGE II.—*The Spanish War.*—This war, caused by the Spaniards insisting upon their right to search British vessels on the coast of South America, was undertaken (1739) against the advice of Walpole, who was at the head of affairs in England from 1712 to 1742. It proved disastrous to the country, and Walpole resigned in the last-named year.

The Young Pretender.—In 1745 the son of the Pretender met with great encouragement in Scotland and at Prestonpans, and Falkirk defeated the royal troops. He marched as far south as Derby, and was then obliged to retreat, owing to disputes among his followers. His army was cut to pieces at Culloden Moor by the English, under the Duke of Cumberland (1746). This was the last effort made on behalf of the Stuarts.

The Seven Years' War.—This war—between England and Prussia on the one hand, and France, Russia, and Poland on the other—was mainly fought out in India and America. The result was the complete establishment of the rule of England in India and the conquest of Canada, Havannah, and Manilla. The French fleet was utterly destroyed off Brest by Admiral Hawke (1756–1763).

Death.—The king died in 1760, and was succeeded by his grandson.

GEORGE III.—(*Colonial Revolt*).—An attempt to impose taxes upon the American colonists caused great discontent. Having no share in home government the colonists refused to contribute toward imperial expenses. Their remonstrances were unheeded, though Edmund Burke and William Pitt, Earl of Chatham, warned the king and the Parliament of the rising storm. In 1773 cargoes of taxed tea were thrown overboard upon their arrival in Boston harbor.

Federation of the States.—In the following year a Congress, representing the various States, assembled at Philadelphia for the purpose of taking steps for removing their grievances. Again they were snubbed by the home government, and preparations were made on both sides for war.

Colonial War.—The first great battle was at Bunker's Hill, June, 1775, and, under the command of Washington, the Americans maintained a war against Great Britain for eight years.

Independence.—On July 4, 1776, the Congress issued "The Declaration of Independence." But not until 1783 was the independence acknowledged by Great Britain.

Continental War.—The cause of the colonists was assisted by the fact that England was at war with France, Spain and Holland. But against these England was entirely successful. Gibraltar stood out for three years against a siege by sea and land. Peace was signed in 1783.

The French Revolution.—The French Revolution of 1789, which ended in the execution of the king (1793), caused another breach with France, and war was declared against her (1793). This war was a war of France against Europe.

French Successes.—The French, under Napoleon Bonaparte, were remarkably successful in their battles on land, playing the *role* of conquerors over a great part of Continental Europe.

Lord Nelson.—But the British navy retained its supremacy. Admiral How took the French possessions in the West Indies, and Admiral Howe defeated the French fleet off Brest (1794); Admirals Jervis and Duncan also fully maintained the honor of the old flag. The greatest of the naval commanders, Lord Nelson, defeated the French at the battle of the Nile (1798), and the Dutch in the Baltic (1801); and at the battle of Trafalgar, where he gave his memorable signal, "England expects every man to do his duty," he won the greatest naval victory ever secured, expiring in the very hour of his triumph (1805).

Military Triumphs.—Sir Arthur Wellesley (afterwards Duke of Wellington) was the first military commander to make a successful stand against Napoleon at Vimeira, at Talavera, at Badajoz, at Salamanca, at Vittoria, and at Orthes and Toulouse. The French were defeated with great loss, and Napoleon abdicated.

Waterloo.—An attempt on the part of Napoleon to regain power led to the battle of Waterloo, in which the hereditary enemies (England and France) fought for the last time on opposite sides. Napoleon was defeated (1815), and sent as a prisoner to St. Helena, where he died in 1821.

Hindostan.—From 1744 to 1783 a war (partly French and partly native) was being waged in Hindostan. Great changes were made in the administration of the colonies there, the imperial government obtaining a greater power over the affairs of the East India Company.

Australia.—Captain Cook during this reign made three voyages round the world, in one of which he discovered New South Wales, which was

shortly afterwards colonized. Thus, in the reign and about the time when the American colonists were leaving the mother country, her children were laying the foundation of other colonies elsewhere.

National Debt.—In this reign the national debt grew from £130,000,000 to £860,000,000.

Death.—George III. died in 1820, having reigned longer than any other English king—59 years.

GEORGE IV.—(*Greece and Turkey.*—In 1827, after a naval battle at Navarino, Turkey was compelled by the allied powers (England, France, and Russia), to acknowledge the independence of Greece.

Repeal of the Test Act.—The Test Act and the Corporation Act—passed in the reign of Charles II.—were repealed in 1828, on the motion of Lord John Russell, and Dissenters were now free to enter office.

Catholic Relief Bill.—In the following year the disabilities of Roman Catholics were removed, on the motion of Sir Robert Peel, after a long agitation.

Death.—George IV. died in 1830.

WILLIAM IV.—(*Reform*).—At the commencement of this reign the attention of the country was directed to the reform of parliamentary representation. After a fierce and bitter struggle, the Reform Bill of Lord John Russell received the royal assent in 1832. By this bill fifty-six boroughs (of less than 2,000 population) lost their right of returning members to Parliament, and thirty-one (of less than 4,000 population) lost one of their members. These members (143) were transferred to the large and growing towns, such as Birmingham, Leeds, etc. The country constituencies were also increased in number, and the right to vote was considerably extended.

Abolition of Slavery.—This reign was also honored by its being the time when slavery was abolished in all parts of British territory. The sum of £20,000,000 was voted as compensation to the slave owners (1833). The agitation for this repeal began in 1787, the prime movers being Wilberforce and Buxton.

The Poor Law.—A bill for the more economic management of the pauper population was passed in 1834. Its main features were the discouragement of outdoor relief and the formation of the Poor Law Board.

Municipal Act.—This bill was passed in 1836, as was also a bill allowing Dissenters to marry in their own chapels.

Death.—William IV. died in 1837.

VICTORIA.—William was succeeded by his niece, Alexandrina Victoria.

Steam.—The year 1838 is memorable for the accomplishment of two great undertakings—(1) the Great Western steamship, the first vessel to cross the Atlantic by the use of steam, made a successful voyage from Bristol to New York; (2) the London and Birmingham Railway was opened September 17.

The Chartists.—In 1838–9 an agitation for the "Five points of the Charter"—(1) Universal Suffrage, (2) Vote by Ballot, (3) Annual Parliaments, (4) Payment of Members, (5) Abolition of Property Qualification for M.P.'s—which assumed a serious aspect in consequence of the advocacy by some of the Chartists of "physical force," led to many disturbances. In November, 1839, an attack was made upon the town of Newport which was easily foiled, and the leaders of the movement, Frost, Williams

and Jones, were transported. The agitation was kept alive for about ten years. In 1848 there were numerous Chartist riots in England. In April a large body met on Kennington Common to march, under the leadership of Fergus O'Connor, to present a monster petition to Parliament in favor of the Charter. It is worthy of note that two of the "Points" have since been conceded by the Legislature.

Wars.—From 1839 to 1842 England was engaged in several minor wars. In 1839 an advance was made upon Cabul which proved most disastrous to the small British force which had been sent to occupy that country in support of Shah Soojah. 4,500 troops and 7,500 camp followers were surrounded as they were leaving the country in pursuance of a treaty, and nearly all were slaughtered. A new expedition soon avenged the massacre, and then the troops were withdrawn from Cabul. In 1840 an expedition was sent against the Pasha of Egypt, who had thrown off his allegiance to the Sultan of Turkey. About the same time England engaged in a little affair, which afterwards assumed large proportions, in China, the result of which was the cession of Hong Kong to England, and the opening of various Chinese ports to British merchants.

Sir Robert Peel.—In 1842 Sir Robert Peel became Premier of England, and shortly after his accession to power inaugurated that policy of free-trade which has done so much to reduce the prices of the necessaries of life to the great masses of the people. Peel, to begin with, modified the taxes on corn, and abolished several duties on other kinds of imported goods. It was not until 1845, however, that Sir Robert announced his intention to accept the platform of the Anti-Corn Law League in favor of the free importation of corn. The corn laws were repealed June 26, 1845. One result of the action of the Premier was the disruption of the Conservative party, of which he was the leader. The Government was almost immediately placed in a minority, and Peel resigned. Sir Robert Peel died in 1850.

The Great Exhibition.—In 1851 the Great Exhibition of the Industry of all Nations was opened in Hyde Park. The proposal emanated from Prince Albert, who devoted considerable care and attention to insuring its success. In the splendid building designed by Sir Joseph Paxton, the most complete collection of the products, natural and manufactured, of all nations ever brought together was exhibited to multitudes of people from all parts of the world.

Russian War.—1854, England and France declared war against Russia, their object being to support Turkey against the latter power. The British navy bombarded Odessa in the Black Sea, and Bomarsund in the Baltic. In September, the allied troops landed in the Crimea, and at the battle of the Alma the Russian troops were compelled to retreat to Sebastopol, which was strongly fortified. On October 17, Sebastopol was attacked by land and sea, but the attack failed. The city, however, was closely besieged. A brilliant charge was made by the Light Cavalry Brigade upon the Russian army that ventured to attack the British forces at Balaklava, and the Russians were repulsed (October 25). On November 5, a more telling victory was gained at Inkerman. Sebastopol was captured in 1855, and a treaty of peace was signed in March, 1856. During the war, a motion was brought forward by Mr. Roebuck, charging the government of Lord Aberdeen with neglect in regard to the clothing and

feeding of the soldiers and other mismanagement. The motion was carried by a large majority, and Lord Palmerston was called to the Premiership.

Indian Mutiny.—In 1857, the native troops in India broke out into mutiny, and committed great enormities upon the European residents. Through the gallant exertions of Sir Colin Campbell, (Lord Clyde) the mutiny was suppressed. In 1858, India was transferred from the East India Company to the British Crown.

Death of Prince Albert.—In 1861, the Consort of the Queen died, to the great grief of the whole nation.

Fenian Conspiracy.—In 1865, great disquietude was caused throughout the nation in consequence of the outbreak of a rebellious conspiracy, promoted by dissatisfied Irishmen. In many of the large towns large numbers of special constables were sworn in. Three of the conspirators were hanged at Manchester for a murder committed while attempting to rescue a comrade from the police. The Clerkenwell prison was partially blown down, and various minor outrages committed, for which sundry persons were sentenced to terms of penal servitude.

The last Reform Bill was passed in 1867, on the motion of Mr. Disraeli (Lord Beaconsfield). The right of voting in boroughs was extended to all householders, and in counties to householders rated at £12 per annum.

Atlantic Cable.—On the 27th July, 1867, the great work of uniting Europe and America by means of telegraphic communication, was brought to a successful termination, after a series of efforts commencing in 1851.

Elementary Education.—In the year 1870, Parliament passed the Elementary Education Act, introduced by Mr. W. E. Forster on behalf of the Gladstone Government; a measure which has done much to bring the means of education to the poorest children of the land. It was not passed without the expression of much difference of opinion; some contending that it interfered too much with the existing system of voluntary education, and that it would tend to the spread of irreligion; others objected that it did not go far enough in the direction of free, compulsory, and unsectarian education.

Empress of India.—The Queen was, in 1877, created Empress of India.

Berlin Conference.—In 1878, the English Government took a prominent part in the Conference called for the purpose of settling the condition of peace between Russia and Turkey.

Afghanistan and Zulu Wars.—In 1879, England was engaged in wars with the Ameer of Afghanistan, and Cetywayo, a Zulu king. Both were carried to a successful termination.

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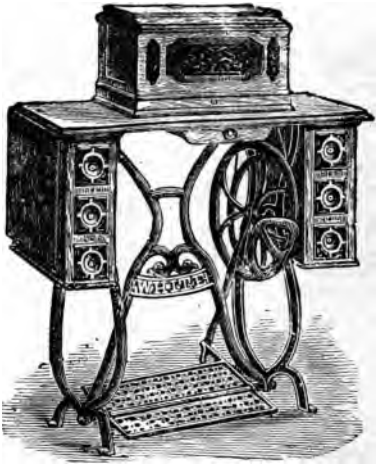

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JOHN B. GOUGH, the distinguished orator, is a marvelous man. He has no peer in the realm of magnetic eloquence. The fable of the bees clustering about the lips of the classic speaker of the olden time is illustrated whenever he speaks in public. For more than forty years he has been prominent on the headlands of reform, now pointing to the tempestuous clouds freighted with storms, and then to the wrecks strewed upon the rocks and sands of fate, driven there by the waves and winds of appetite and passion. He is a hero who, having released himself from the bondage of intemperance, and having strangled a serpent more to be dreaded than the monster slain by Hercules, he comes to the front to rescue his fellow men.

His deficient education in early life has been supplemented by study in that vast university, the world at large. The home of poverty, the shop of industry, the tavern, the theatre, the thronged street, had hints and suggestions for him. The humor and wit of jovial company, the pinching sufferings of want, and the pathos of sickness and death all aided in teaching his sensitive nature the lessons not taught in any institutions of learning. It is not fair to say that he is a mere mimic and story teller, excelling only in theatrical clap-trap. Those who go to hear him will be amused, interested and instructed, "enthused" and "moved to laughter and to tears." He plays upon the intellectual and emotional nature as a skilled organist plays upon a well-toned instrument, touching by turns the keys that excite mirth and those that swell the heart with sorrow. Now a touch brings tears to the eyes, then a thrill of merriment ripples every face with laughter. Extracts from his lectures may be found in various works on elocution and in school-books, that will not suffer in comparison with the best utterances of "college-bred" orators. His comic and pathetic anecdotes, his common sense and philosophy, his argumentative appeals, never fail to fire the heart under the inspiration of his ringing voice and magnetic manner.

John B. Gough was born at Sandgate, Kent, on the 22d of August, 1817. His father received a small pension for services in the Peninsular war. The old gentleman was endowed with an iron constitution and a soldier's courage. He was nearly ninety years of age when he died. The gifted subject of this sketch inherited the vigor and pluck of his father and the gentle graces of his mother; hence his heart is a fountain of sympathy, and when words of pity drop in it the water splashes into his eyes. He and his sister were taught by their mother, who had been many years a schoolmistress in the village of Sandgate. The famous friend of the slave and devoted champion of emancipation, William Wilberforce, resided at Sandgate during the summer months, and at a prayer meeting held in the house where the great philanthropist lodged young Gough attracted his attention. "He patted me on the head," said John, "said many kind things, and expressed wishes for my welfare. He also presented me with a book, and wrote with his own hand my name on the fly-leaf. Having acquired some reputation as a good reader, he requested me to read to him. I did so, and he expressed himself

much pleased. The book he gave me I have long since lost, but never shall I forget the kindly words of the venerable giver."

When the lad was about twelve years old arrangements were made with a family at Sandgate about to emigrate to America to take him with them. They were to receive ten guineas and, in return, care for him during the voyage, teach him a trade after his arrival in the New World, and provide for him until he became of age. The separation from his mother and sister was sad and touching; it was the tearing asunder of the fibres of the heart.

On the 3d of August, 1829, he reached Sandy Hook. I have not space to spare for the particulars of his life-history. After two years' experience at farming in Oneida county, N. Y., he came with the consent of his parents to the city of New York, obtained a situation in a publishing house, and began to learn the bookbinder's trade, receiving for his services one dollar per week. Here his mother and sister joined him. What a meeting that must have been! Only those who have been long separated, with a vast ocean between them, can appreciate such a clasping of arms, such a pulsation of hearts, such a mingling of tears, such a flowing of souls as they enjoyed when they met after an absence of years. There is no relation in this life so tender and sacred as that of an affectionate mother and tender child. In 1833, through depression in trade, John lost his situation, and then followed painful scenes of deprivation and want. One day in July, 1834, his sister accosted him on his reaching home with the sorrowful words: "John, mother's dead!" What a blow was this to the poor boy and his sister! Removed from the restraining influence of a tender-hearted mother, he began a course of dissipation. He frequented the street corners, the saloons and taverns, where his remarkable powers of imitation and mimicry, his gift of speech and song, made him a popular favorite. He was on the downhill path to ruin. He was at first a moderate drinker, serving an apprenticeship to intemperance. The habit of drinking grew with his growth, and was strengthened by indulgence. The more powerful it became the less power and the less inclination had he to resist it. In his own touching words, that palpitate with feeling:

"Through the mists of memory my mother's face would often appear, just as it was when I stood by her knee and listened to lessons of wisdom and goodness from her loving lips. I would see her mild, reproving face, and seem to hear her warning voice, and, surrounded by my riotous companions, at certain seasons reason would struggle for the throne whence she had been driven, and I would, while enjoying the loud pladits of sots,

> " 'See a hand they could not see,
> Which beckoned me away.' "

To shorten a sad story, the hero of this sketch drifted about on the dark and stormy sea of drunkenness. He became an unhappy waif on the current of dissipation—the buffoon of the alehouse, the good-hearted good-for-nothing, the victim and slave of appetite.

On a happy Sunday evening a stranger laid his hand gently upon the tipsy lounger, and in kind speech invited him to attend a temperance meeting. A brief conversation ended in the consent of the reckless young man to go. He heard the appeals that were made. He listened attentively, not only with his ears, but with his heart also. With a nervous hand he signed the pledge of total abstinence, and forthwith com-

menced a career which has crowned him with honor as the foremost temperance orator the world has seen. And he has been rewarded not only with wealth and fame, but with the confidence and affection of an immense constituency of appreciative and admiring friends on "both sides of the water," and wherever the English language is spoken.

This event occurred nearly forty years ago. It was in 1842 that he put his name to the pledge, in the city of Worcester, Massachusetts. After writing his name he arose, and addressing the audience, told the touching story of his sufferings as the slave of rum, and the recital moved the people so that strong men wept like children. He gives the following graphic description of what happened to him that memorable Sunday evening: "Some one tapped me on the shoulder. An unusual thing, that, to occur to me, for no one cared to come in contact with the wretched, shabby-looking drunkard. I was a disgrace—a living. walking disgrace. I could scarcely believe my own senses when I turned and met a kind look. The thing was so unusual and so entirely unexpected that I questioned the reality of it, but so it was. It was the first touch of kindness which I had known for months, and simple and trifling as the circumstance may appear to many, it went right to my heart, and like the wing of an angel troubled the waters in that stagnant pool of affection, and made them once more reflect a little of the light of human love. The person who touched my shoulder was an entire stranger. I looked at him, wondering what his business was with me. Regarding me very earnestly, and apparently with much interest, he said, 'Mr. Gough, I believe?'

"'That's my name.' I replied, and was passing on.

"'You have been drinking to-day?' said the stranger, in a kind voice which arrested my attention and quite dispelled any anger at what otherwise I might have considered an officious interference with my affairs.

"'Yes, sir, I replied, 'I have.'

"'Why do you not sign the pledge?' was the next query.

"I considered for a minute or two, and then informed the stranger friend who had so unexpectedly interested himself in my behalf that I had no hope of ever becoming again a sober man; that I was without a single friend in the world who cared for me or what became of me; that I fully expected to die very soon—I cared not how soon, or whether I died drunk or sober; and, in fact, that I was in a condition of utter wretchedness.

"The stranger regarded me with a benevolent look, took me by the arm. and asked me how I should to like be as I once was—respectable and esteemed, well clad, and sitting as I used to in a place of worship, enabled to meet my friends as in old times and receive from them the pleasant nod of recognition as formerly; in fact, become a useful member of society. 'Oh!' I replied, 'I should like all these things first rate, but I have no expectation that such a thing will ever happen; such a change cannot be possible.' 'Only sign a pledge,' replied my friend, 'and I will warrant that it shall be so. Sign it, and I will introduce you myself to good friends, who will feel an interest in your welfare and take a pleasure in helping you to keep your good resolutions. Only, Mr. Gough, sign the pledge, and all will be as I have said—aye, and more too.' Oh! how pleasantly fell those words of kindness and promise on my crushed and bruised heart. I had long been a stranger to feelings such as now awoke in my bosom. A chord had been touched which vibrated to the tone of love. Hope once more dawned, and I began to

think, strange as it appeared, that such things as my friend promised me might come to pass. On the instant I resolved to try, at least, and said to the stranger:

"'Well, I will sign it.'

"'When?' he asked.

"'I cannot do so to-night,' I replied, 'for I must have some more drink presently, but I certainly will to-morrow.'

"'We have a temperance meeting to-morrow evening,' he said; 'will you sign it then?'

"'I will.'

"'That's right,' said he, grasping my hand; 'I will be there to see you.'

"'You shall,' I remarked, and we parted. I went on my way much touched by the kind interest which at last some one had taken in my welfare. I said to myself, if it should be the last act of my life I will perform my promise and sign it, even though I die in the attempt, for that man has placed confidence in me, and on that account I love him. I then proceeded to a low groggery in Lincoln Square Hotel, and in the space of half an hour drank several glasses of brandy; this, in addition to what I had taken before, made me very drunk, and I staggered home as well as I could. Arrived there, I threw myself on the bed and lay in a state of insensibility until morning.

"The first thing which occurred to my mind on awaking was the promise I had made on the evening before to sign the pledge, and feeling as I usually did on the morning succeeding a drunken bout, wretched and desolate, I was almost sorry that I had agreed to do so. My tongue was dry, my throat parched, my temples throbbed as if they would burst, and I had a horrible burning feeling in my stomach which almost maddened me, and I felt that I must have some bitters or I should die. So I yielded to my appetite, which would not be appeased, and I repaired to the same hotel where I had squandered so many shillings before; there I drank three or four times, until my nerves were a little stronger, and then I went to work. All that day the coming event of the evening was continually before my mind's eye, and it seemed to me as if the appetite which had so long controlled me exerted more power over me than ever. It grew stronger than I had at any time known it, now that I was about to rid myself of it. Until noon I struggled against its cravings, and then, unable to endure my misery any longer, I made some excuse for leaving the shop and went nearly a mile from it in order to procure one glass wherewith to appease the demon who so tortured me. The day wore wearily away, and when evening came I determined to keep the promise I had made to the stranger the night before.

"The meeting was to be held in the lower Town Hall, Worcester, and thither, clad in an old brown surtout, closely buttoned up to my chin, that my ragged habiliments beneath might not be visible, I went. I took a place among the rest, and when an opportunity of speaking offered itself I requested permission to be heard, which was readily granted. When I stood up to relate my story I was invited to the stand, to which I repaired, and in turning to face the audience I recognized my acquaintance who had asked me to sign. It was Mr. Joel Stratton. He greeted me with a smile of approbation, which nerved and strengthened me for my task, as I tremblingly observed every eye fixed on me. I lifted my quivering hand and then and there told what rum had done for me. I

related how I was once respectable and happy and had a home, but that now I was a houseless, miserable, loathed, diseased, and blighted outcast from society. I said scarce a hope remained to me of ever becoming that which I once was, but, having promised to sign the pledge, I had determined not to break my word, and would now affix my name to it. In a palsied hand I with difficulty grasped the pen, and in characters almost as crooked as those of old Stephen Hopkins in the Declaration of Independence I signed the total abstinence pledge, and resolved to free myself from the inexorable tyrant rum."

Mr. Gough has addressed a larger number of persons than any other man now living. His services are in great demand as a lyceum lecturer, and he commands larger audiences and better prices than any other man in the lecture-field. He probably declines more calls for his lecture labors than any other man receives. He is sure of a full house whether he speaks in Faneuil Hall in Boston, or Exeter Hall in London, or in Cooper Institute, New York. His efforts for the benefit of Christian and charitable institutions have been generous and frequent, and have resulted in securing handsome contributions towards their support. In person he is of medium height, full-chested, and wide-shouldered. His head is large, and well covered with a shock of silver-gray hair, which falls in wavy abundance upon his shoulders. His bluish gray eyes are large, and when he is excited in conversation or speech they light his earnest and expressive face so that you almost see his thought before it comes to you in winged words. His beard is almost white, and allowed to grow to patriarchal proportions. His voice is rich, deep, mellow and magnetic, and his manner so modest it wins the esteem and confidence of those who are willing to give him a fair hearing. He rises from his seat as though he supposed nobody was looking at him. With his hands folded behind him he walks to the front of the platform and announces the number of times he has spoken in the city. He declares that he has nothing new to say, and that he will repeat the old, old story. He speaks in a low tone of voice and slowly at first, but the color comes to his face, the shadow of the feeling in his heart, the banner of the thoughts marching to the front in his brain. Now he has cut loose from his moorings and is fairly afloat. Every hearer is attentive. The interest is seen in the "sea of upturned faces." The orator rounds his periods and polishes his sentences without knowing it. He is an actor and orator. Garrick did not excel him in mimicry, and Mathews could not beat him in telling a story. What a thrilling description he gives of a man in a boat going over the Niagara Falls! We see the full-flowing river above the rapids; it is smooth, and shines like molten silver. The victim glides on. Hands beckon, voices call, signals wave from the shore for the man to stop; but he laughs and replies that he will hard-up the helm and pull on his oars in time. The birds sing, the flowers bloom, rainbows arch the way to overwhelming disaster; the roar of the water-wonder speaks of the danger and needs no interpreter to translate its thunder. When he has gone too far, when it is too late, he grasps the oars; they snap in his hands. He is white with fear and terror; the veins on his forehead stand out like whipcords, the beaded sweat rolls like rain down his face. He is swept over the falls and lost—for ever lost. Mr. Gough is generous, frank and sociable, and enjoys a game of rough-and-tumble, innocent fun. He has written a very interesting history of his life and labors, to which the reader is referred for further information.

THE ACTION OF ALCOHOL ON THE BODY.*

BY BENJAMIN W. RICHARDSON, M.D., F.R.S.

SUPPOSE it were possible for every one in this large assemblage to say with all truthfulness, while recasting the experiences of life: "I know of one particular agent or thing which has directly killed one person whom I knew. The human being thus slain had the slaying agent under his own absolute control. He need not have touched it unless he had willed so to do, and he would never have felt any want for it if he had not been trained to feel the want!"

Suppose this audience, as an English audience merely, were enlarged until it included all who might fairly form an audience capable, by experience and years and capacity of mind, to make a correct statement on what they had clearly and definitely seen. Suppose every one of them could say: "I, too, know that the same agent has killed one person who lived in my circle of acquaintance, so that taking us all in combination in the span of our lives, which may fairly be included in thirty years, the fatal effects of the said agent have been witnessed by ten millions of observers!"

Suppose we could listen to a foreign voice speak-

* An Address delivered in the Sheldonian Theatre, at Oxford, at the request of the CHURCH OF ENGLAND TEMPERANCE ASSOCIATION.

ing to us from across the Atlantic, and could hear it declare on the authority of an official census return: "For the last ten years this one agent has imposed upon the nation (the United States) a direct expense of $600,000,000; an indirect expense of $600,000,000; has destroyed 300,000 lives; has sent 100,000 children to the poorhouses; has committed at least 150,000 people into prisons and workhouses; has made at least 1,000 insane; has determined at least 2,000 suicides; has caused the loss by fire or violence of $10,000,000 worth of property; has made 200,000 widows and 1,000,000 orphans!"

Suppose, returning to our own country, we were to discover that among those unhappy persons who fill our asylums for the insane, two out of three were brought there owing to the direct or indirect effects of this destroyer. That amongst the paralyzed who sit or lie there day after day, until inevitable death takes them away—all of them already in the shroud of a living death, toneless, speechless, helpless, existing only by their mere vegetative part—that nine-tenths of these are brought to the condition in which we see them by the direct or indirect effects of this one destroyer.

Suppose we entered the cells of our prisons, and amongst those we met wearing out their lives in solitude, shame, and misery, so that the noblest of all that is human, *work*, sank the victims into a sense of deeper degradation; and suppose as we stood that we heard the voice of the most scientific scholar who ever graced the judicial bench of England since the days of the illustrious Chancellor Bacon, saying, as the voice of Mr. Justice Grove

iately said, that the most potent influence for securing these incarcerations, and for placing the miserables before us in such terrible position, was this same agent.

Suppose we could at the present moment see before us, passing in sad panoramic display, some of the broken-heartedness of this still unhappy country. Tortured women, undergoing torture, or listening with palpitating hearts, and with their children scared and hidden away; waiting for the dreaded footsteps of him whose faintest sound ought to be the joy of their expectant lives. Could we see all the weeping mothers and fathers hoping against hope for the reformation of their children; mourning a loss that the grave even will relieve—loss to truth, honor, self-respect, affection, duty, honesty, every virtue on which parents find new life in their offspring. Suppose, seeing these things in their unutterable vastness, we could say they are the work of the one and the same destroyer!

Suppose we could, day by day, keep under our observation for one year the thousand depots in which this agent is stored up, and from which it is dispensed in million potions a day to smite and to slay young and middle-aged and old, rich and poor, deluder and deluded, polluted and polluting. Could we watch the inroads of death into each of those centers of distributing death, and discover that out of them the marauder tore 138 to 100 of his other victims elsewhere, and seeing this fact could recognize that death, more than just, acted on the sellers through the things sold!

Suppose we took into our consideration the reck-

oning that the capital which is invested in this destroyer represents in the British Islands alone the sum of £117,000,000 sterling. That the duties paid in one year amount at least to £30,000,000 of money; that each tax-payer who has an income of £500 a year is assessed £31 toward this imposition, whether he avail himself or not of the means to injure himself by the cause of the imposition!

Suppose we knew of two classes of people who were seeking, in forestallment of calamity to their families, to insure their lives, and that the distinction into classes lay simply in one matter—That a certain Class (B) habitually subjected itself, and a certain Class (C) did never subject itself, to this particular substance. Suppose it were found in respect to these applicants that Class B showed a mortality of 7 per cent. below the calculated average of life, and Class C a mortality of 26 per cent. below that average; that from bonuses, or returns from amount of premium paid, Class B received 34 per cent., Class C 53 per cent.; that dealers in the particular agent under review were hardly admissible even into Class B, and that their vocation added a mortality of two out of three compared with the vocations of Class C!

Suppose, in passing through our hospitals for the cure of the sick, the physician in attendance were to name all the forms of disease there, and were to say, as he might most honestly, these names, very different in kind, and seeming to denote very different maladies—gout, paralysis, albuminuria, apoplexy, delirium tremens, enfeebled heart, eczema, epilepsy, consumption (in one phase

of that disease at least), liver disease or cirrhosis, dropsy—to say nothing of other maladies under dispute as to their origin; these names do truly but indicate various forms of disease originating in one agency to which these afflicted have been directly or indirectly subjected!

Suppose it were possible, after this general survey, to be able to cast up the sum of misery represented in such varying disguises, and to prove that they are all the work of one common enemy of mankind, should we not hesitate, almost in fear, fear which familiarity itself would not utterly conquer, as we ask ourselves: Is it really true? Is there such an enemy, such a power, such a *bona fide* devil in our midst?

The facts must stand for themselves in all their terrible reality. There is such a devil, though he is not in polite language called so. He assumes various names. The learned—owing to his infinite subtlety, a subtlety as refined as the impalpable powder with which ancient ladies of the East dressed their hair—call him *alcohol.* The unlearned call him *beer.* The savages call him *fire-water.* The rollicking scholars call him *wine.* The slangsters call him *B. and S.*, or *cocktail*, or *gin-sling.* Gentler lips, that ought to know less of him and more of botany, sometimes call him *cherries.* We will call him to-day, because of his subtlety, and because, after all, the term defines him best for our purpose, *alcohol.*

In this audience it is unnecessary to go over again, with proofs in hand, the details of the charges I have made against this subtile agent

He has been arraigned for them over and over again; he has been proved guilty of them all over and over again. Yet hath he always escaped scot-free, and continued his marauding, kept together his retinue, and defied his enemies. He has paid his servants in their own coin and his own, making them obey, killing them as they obeyed, and, stretching out his empire over their graves, has imprinted his brand on the offspring they have raised, whether the offspring approved or loathed the badge of his service.

WHY THE ENEMY EXISTS.

The startling question hereupon faces us—Why is this subtile enemy thus allowed to go free? He is not recently discovered as a new enemy. Not at all! Solomon detected him, and the good race of preachers who take their lead from that wise man have continued his denunciation. The Esculapians from the first have detected him, and, with a few fluctuating periods of complacency or dalliance, have run him down. The law-makers have denounced him in all ages.

And yet he lives!

There are two reasons why this enemy survives and flourishes, which reasons are personal to man. I mean by this that they belong to man individually, according to his likings and beliefs. These are primary or direct reasons because personal. There are other reasons which have sprung out of the personal, and have slipped into the rule of what is called political necessity. These are indirect reasons, and they rest exclusively on the direct,

They hold, therefore, notwithstanding their immense practical importance, a second place. They would speedily be set aside so soon as the first came under the control of the majority of the nation. They may even now be brought under correction with a view to the removal of the errors they sustain.

I am aware that many of those who are most earnest in the cause of Temperance, look to the removal of the primary reasons, by which alcohol retains its place, as the grand remedy; and certain it is that until those primary reasons are removed, the greatest reform in legislative action can be but of slight and temporary service. It seems, however, to me, that sufficient has already been done in the way of influencing the education of the people toward the truth, to enable the Legislature, backed by the large and increasing constituency which holds to Temperance, to begin to invent some practical measure which shall put suppression of the common enemy under certain forms of legal recognition, so that the moral reformer may have a clear course, instead of being impeded, as he is at this time, by the protection which the law systematically extends to the evil he would root up.

I will return to this topic again, at a later stage of my discourse. Let me recur now to the two primary reasons by which the use of alcohol, with all its attendant calamities, is sustained.

AN INBRED ENEMY.

There is an old proverb which says that "What is bred in the bone will never come out of the

flesh." The proverb is not quite correct anatomically. It should have said, "What is bred in the brain will never come out of the flesh." Even then it would be imperfect, physiologically, and should read, "What is bred in the brain will never come out of the flesh in one generation." The proverb, with all its faults, is impressive and expressive. It tells correctly enough that those sins which are engrafted into men are not readily eradicated. In this question of alcohol and the errors of life and taste depending upon it, the saying is signally correct. In communities which take wine as a general custom, there exists a system of breeding the custom, which is not dispelled in one, nor completely in two, generations. This is a peculiarity of the action of alcohol on the nervous organization, or on that essence of nervous organization subtler than the mere nerve-matter into which the impressions are instilled, that the impression it makes remains, and is transmitted, like feature, and taste, and disease, from the parent to the child. Of the nature of the inscrutable design, by which attributes and faculties, evil as good and good as evil, pass from the born to the unborn, I pretend to know nothing beyond the fact. But to me it always seems, as I think it must to you, one of the most solemn passages of human knowledge. To know that even in this world we none of us ever die. That our acts, our virtues, our failures, our physical conditions, appetites, passions, pass on to other generations. That the forms we mould ourselves to by acts original to ourselves, pass on to other generations. That habits and passions we subdue in ourselves

are subdued, as far as we are concerned, in other generations that spring from us.

Therefore, in relation to the influence of this destroying agent, alcohol, one of the primary reasons for its continued use is that the desire, or appetite, or passion, for it has been transmitted to us by our predecessors. If there were no such foundation of appetite and passion for it, any one of the arguments against it to which I have adverted were sufficient to destroy its potency. With such foundation all the arguments, and as many more equally cogent, were of no direct avail with the masses that are influenced.

Happily, the virtues are transmitted not less readily than the errors of mankind; and so in considering this primary cause of the continued power of the destroyer we are not driven as men without hope to doubt our efforts for the destruction of the power. Our efforts, in every instance where they succeed in the present, are multiplied so many times into the future, that a generation or two will plant a new order, and make what is to us the most difficult portion of our labor the easiest part of the future emancipation.

In every effort it is always best to look the gravest difficulty first in the face; and I put this difficulty in view at once, that all may see and detect for themselves the mode of removing it. Detect that its removal is certain, and some day rapid, if the course of reformation be steadfastly pursued: detect also that patience is necessary, and that time spent is not time lost, but is time employed, in the most useful way, for securing the harvest of good results, the success that will assuredly follow.

FALSE BELIEFS.

The second primary cause for the continued power of alcohol in the world is falseness of belief as to the effect of the agent upon the body and the bodily powers. From the hilarity produced by wine, and which was originally conceived to be its only virtue, to "make glad the heart," there has crept into the habits of men the desire to be made hilarious at every meal. From this desire has come the practice of introducing wine or other spirituous drinks at certain meals regularly; and from this, again, by association of wine and its allies with food, has come the idea that the hilarity-provoking stimulant is also a food.

To this view Science herself, in opposition to common-sense experience, gave, some years ago, her sanction. It was a sanction slowly rendered, and never perfectly rendered. It was a sanction founded on the analogy of physical action of alcohol outside the body, its property of preserving from putrefaction, and its burning, rather than on any correct observation as to its true physiological action on living animal organisms. But there is no denying that the sanction was given, and that it has inflicted, for a time, an incomparable wrong. It has given a reason for the habitual use of alcohol which is, I repeat, a primary reason. It suggests not only that alcohol is a food, but that it is a necessary food. A food man can not do without. A sustaining food, which in this overworked day is more requisite than ever.

A few persons, whose eyes are opened to the

fallacy of this reasoning, use it notwithstanding, because in their hearts they are infatuated with the liking for alcohol, and are glad to find any excuse that shall minister to their own inclinations. The majority of persons whose eyes are not opened to the truth, believe in this reasoning absolutely, and act upon it with implicit honesty. These often tell you with perfect candor they regret as much as can be regretted the evils they can not fail to recognize; but, say they, of what use is it deploring evils that spring from a necessity? I have never yet met with a legislator who declined to legislate against alcohol who did not express as the reason for his action this theory of necessity. I have never yet conversed with a member of my own learned profession, who was in favor of alcohol, who did not assign the selfsame argument. I have never yet spoken with a clergyman on that side of the question who did not follow the politician and the doctor, and adduce not only their reason, but their authority.

It is the duty of us who have seen the true light on the question of temperance to deal plainly and faithfully with the reasoning on this point of necessity. That false doctrine eradicated, the power of alcohol for all its evil is undermined. That left in doubt, the power of alcohol to continue all its evils remains practically untouched. I believe, therefore, that from the position I now, by your favor, occupy, I can not do better than tackle this reasoning again on scientific evidence: and on the ground that—

> "Truth can never be confirmed enough,
> Though doubt should ever sleep."—

venture in a few sentences to repeat what I have spoken on many public occasions on this vital matter.

ORIGINAL RESEARCHES ON THE ACTION OF ALCOHOL.

In so speaking, I can not, I think, do better or simpler than narrate the individual method of inquiry by which, in an independent way, I was brought, without being able to avoid the result, to the conclusion I submit to you, viz., that the popular prevailing idea that alcohol, as a food, is a necessity for man has no basis whatever from a scientific point of view.

Let me say, that at the commencement of the labors which brought me to the conclusion above stated, I had no basis in favor of or preconceived opinion respecting alcohol.

Like many other men of science, I had been too careless or too oblivious of those magnificent labors which the advocates of temperance for its own sake had, for many previous years, through good report and evil report, so nobly and truthfully carried out. But for what may be called one of the accidents of a scientific career, I might indeed, to the end of my days, have continued negative on this question.

The circumstance that led me to the special study of alcohol is simply told. In the year 1863 I directed the attention of the British Association for the Advancement of Science, during its meeting at Newcastle, to the action of a chemical substance called nitrite of amyl, the physiological properties of which I had for some months previously been sub-

jecting to investigation. My researcl es attracted so much attention, that I was desired by the physiological section of the Association, over which Professor Rolleston most ably presided, to continue them, and, in the end, I was enabled to place in the hands of the physician one of the most useful and remarkable medicinal agents that has ever been supplied by the chemist for the relief of human suffering. The success of this research led the Association to entrust me with further labors, and in the course of pursuing them, other chemical substances, nearly allied to that from which I started, came under observation. Amongst these was the well-known chemical product which the Arabian chemist, Albucasis, is said first to have distilled from wine, which on account of its subtlety was called alcohol, which is now called ethylic alcohol, and which forms the stimulating part of all wines, spirits, beers, and other ordinary intoxicating drinks.

In my hands this common alcohol, and other bodies of the same group, viz., methylic, propylic, butylic, and amylic alcohols, were tested purely from the physiological point of view. They were tested exclusively as chemical substances apart from any question as to their general use and employment, and free from all bias, for or against their influence on mankind for good or for evil.

The method of research that was pursued was the same that had been followed in respect to nitrite of amyl, chloroform, ether, amylene, and other chemical bodies, and it was in the following order: First, the mode in which living bodies would take *up or absorb the* substance was considered. This

settled, the quantity necessary to produce a decided physiological change was ascertained, and was estimated in relation to the weight of the living body on which the observation was made. After these facts were ascertained the special action of the agent was investigated on the blood, on the motion of the heart, on the respiration, on the minute circulation of the blood, on the digestive organs, on the secreting and excreting organs, on the nervous system and brain, on the animal temperature, and on the muscular activity. By these processes of inquiry, each specially carried out, I was enabled to test fairly the action of the different chemical agents that came before me.

In the case of alcohol, tried by these tests, I found then a definite order of facts, the principal of which I may narrate. It was discovered that alcohol, being a substance very soluble in water, would enter the body by every absorbing surface: by the skin, by the stomach, by the blood, and by the inhalation of its vapor in the lungs. But so greedy is it for water that it must first be diluted before it can be freely absorbed. If it be not so diluted it will seize the water from the tissues to which it is applied, and will harden and coagulate them. In this way it may even be made to coagulate the blood itself, and in some instances of rapid poisoning by it, the death has occurred from the coagulation of blood within the vessels, or in the heart.

The quantity required for absorption in order to produce distinct effects is from twenty to thirty grains of the fluid to the pound weight of the

animal body, in those who have not become habituated to the influence of it. In quantities that can be tolerated it affects the blood, making that fluid unduly thin or coagulating it, according to the amount of it that is carried into the circulating system. It acts on the blood-corpuscles, causing them to undergo modifications of shape and size, and reducing their power of absorbing oxygen from the air. It changes the natural action of the heart, causing the heart to beat with undue rapidity and increasing the action, in extreme instances, to such a degree that the organ in an adult man is driven to the performance of an excess of work equal to the labor of lifting over twenty-four tons weight one foot in twenty-four hours. In some instances the number of extra strokes of the heart produced by alcohol has reached 25,000 in the twenty-four hours. The effect on the respiration follows that on the heart, and is correspondingly deranged.

On the minute blood-vessels, those vessels which form the terminals of the arteries and in which the vital acts of nutrition and production of animal heat and force are carried on, alcohol produces a paralyzing effect in the same manner as does the nitrite of amyl. Hence the flush of the face and hands which we observe in those who have partaken freely of wine. This flush extends to all parts, to the brain, to the lungs, to the digestive organs. Carried to its full extent it becomes a congestion, and in those who are long habituated to excess of alcohol the permanency of the congestion is seen in the discolored, blotched skin, and, too often, in

the disorganization which is planted in the vita. organs, the lungs, the liver, the kidney, the brain.

On the digestive system alcohol acts differently according to the degree in which it is used. In small quantities it excites the mucous membrane of the stomach so as to increase the secretion of gastric juice, and from that circumstance some think it assists digestion. In larger quantities it impairs the secretion and weakens digestion, producing flatulency and distension of the stomach. On the liver, if the action of the spirit be at all excessive, the influence is bad. Organic change of the structure of the liver is very easily induced. The same is true in respect to the action of the agent on the kidney.

On the nervous system alcohol exerts a double action. There are two nervous systems in man and in the higher animals, viz., the vegetative or mere animal nervous system, and the cerebral and spinal nervous system which receives the pictures of the external universe, and is the seat of the functions of reason and of the supremer mental faculties. On both these systems, vegetative and reasoning, alcohol produces diverse actions, all of which are perverse to the natural. At first it paralyzes those nervous fibers of the organic or vegetative system which control the minute vessels of the circulation. By this means a larger supply of blood is driven by the heart into the nervous centers, and nervous action from them is first excited, afterward blunted; the brain is in a glow, and that stage of mental exhilaration which is considered the cheering and exciting stage of wine-

drinking is experienced. After a time, if the action progresses, the opposite condition obtains; the function of the higher mental centers is depressed, the mere animal centers remain uncontrolled masters of the intellectual man, and the man sinks into the lower animal in everything but shape of material body. In the lower animals a state of actual madness accompanies this stage, and in man, sometimes, the same terrible condition is also witnessed.

Not only are the brain and nervous centers thus paralyzed, the other vital organs of the body which have their fine, minute vascular structures governed by the nervous current, the lungs, the brain, the liver, the kidney, the lining or mucous surface of the digestive system, the various serous surfaces of the body, are also through their weakened vessels surcharged with blood. They are congested as the skin is when the body of the drinker is flushed with wine; or, to use another *simile*, as the surface of the body is after the vessels, long stricken by cold, are relaxing and glowing red under the application of heat.

In this manner, by the course of experiment, I learned, step by step, that the true action of alcohol, in a physiological point of view, is to create paralysis of nervous power. It acts precisely as I had seen nitrite of amyl and some other chemical bodies act.

Previously to the performance of these researches, some distinguished physiologists had shown that mechanical division of the nervous cords which govern the vascular supply of special

parts of the body leads to flushing those parts with blood. I traced, a little later, that the local paralyzing action of extreme cold was practically the same process, and was therefore followed by the same effects. And now in these inquiries into the influence of chemical agents, I discovered an exact analogy, nay, I may say, in all but the method, an identity of principle. If we could temporarily divide with the knife all the nervous supplies of the vascular structures of the body, we should temporarily produce the same conditions as are produced by such diffusive escaping agencies as nitrite of amyl or alcohol. We should set the heart at liberty to work against reduced resistance; we should see the vessels of the skin and other parts intensely injected with blood; and, if we repeated the process many times, we should witness structural changes of parts, organic disease, structural diseases; such changes as are produced in those who suffer from excess of alcohol during long periods of time.

In brief, my experimental inquiries led me to discern, without original intention of such discernment, that the power for which alcohol is esteemed, its power as an agent to liberate the heart, to excite the nervous centers and influence the passions, to afterward congest the centers and dull the passions, to make men violent and mad, then imbecile and palsied, is, all through, one power in various stages of development and degree: a power not exercised for the elevation, but for the reduction of all the functions of life.

Pursuing still the plan I had set forth for the general method of investigating the action of chemi-

cal substances on animal bodies, I was led to study the influence of alcohol on the animal temperature. The prevailing view on this subject had been that alcohol increases and maintains the animal temperature. This view, it is true, had been challenged. Dr. Aitken had challenged it many years ago in the first volume of the Literary and Philosophical Society of Manchester. The illustrious Beddoes had challenged it. The late Dr. Cheyne, of Dublin, had challenged it. Dr. Carpenter, Dr. Lees, and some others whose prescience had been far more acute than mine, had challenged it. In perfect candor, the inference had been drawn by many observers that alcohol reduces the animal temperature; that those who are exposed to extremes of cold are best fortified against cold when they abstain from alcohol and depend on warm unintoxicating drinks; and that the popular idea on the subject was wrong. At the same time, it is certain that the impressions of these eminent scientists were not so confirmed by direct and absolute experimental research as to satisfy the world in general of their correctness. For my own part, I was ignorant, and that is why I sought for certain knowledge. To the research I devoted three years, from 1863 to 1866, modifying experiments in every conceivable way, taking advantage of seasons and varying temperatures of season, extending observation from one class of animal to another, and making comparative researches with other bodies of the alcohol series than the ethylic or common alcohol.

The results, I confess, were as surprising to me as to any one else. They were surprising from

their definitiveness and their uniformi y. They were most surprising from the complete contradiction they gave to the popular idea that alcohol is a supporter and sustainer of the animal temperature.

It will be borne in mind that I have described a flush from alcohol as the first effect of it in its first stage, when into the paralyzed vessels the larger volume of blood is poured. In that stage, that is to say in the earlier part of it, I found an increase of temperature. This increase, however, was soon discovered to be nothing more than radiation from an enlarged surface of blood; a process, in fact, of rapid cooling, followed quickly by direct evidence of cooling. After this I found that through every subsequent stage of the alcoholic process, the stage of excitement, of temporary partial paralysis of muscle, of narcotism and deep intoxication, the temperature was reduced in the most marked degree. I placed alcohol and cold side by side in experiment, and found that they ran together equally in fatal effect, and I determined that in death from alcohol the great reduction of animal temperature is one of the most pressing causes of death. I showed that this effect of alcohol in reducing the animal temperature extends through all the members of the alcohol group of chemical substances, and that with increase of the specific weight of the spirit the reducing effect is intensified.

Thus, by particular and varied experiment, it was placed beyond the range of controversy that alcohol, instead of being a producer of heat in those who consume it, and therefore a food in that sense, *is a depressor*, and therefore not a food in that

sense. The earliest scientists were confirmed in their peculiar views to the letter. I honor them for their originality and truth as heartily as I appreciate the privilege of having been the first to apply the modern and more accurate system of thermometric inquiry to test, and, as it turned out, to confirm and establish their observations and practices.

From the study of the action of alcohol on the temperature of animal bodies, I proceeded next to test it in respect to its effects as a sustainer of the muscular power. Here I had the experience of the trainers of athletes to guide me, an experience which was strongly against the use of alcohol as a supporter of muscular power and endurance. I preferred, however, to test again minutely the direct effect of alcohol on muscular contraction, the result being the determination that, with the exception of a very brief period during the earliest stage of alcoholic flushing, the muscular force, like the temperature, fails under its influence. In a word, I found that the helplessness of muscle under which the inebriated man sinks beneath the table, and under which the paralyzed inebriate sinks into the grave, is a cumulative process, beginning so soon as the physiological effect of alcohol is pronounced, and continuing until the triumph of the agent over the muscular power is completed.

SUMMARY OF RESEARCH.

What I may call the preliminary and physiological part of my research was now concluded. I had learned, purely by experimental observation, that

in its action on the living body, this chemical substance, alcohol, deranges the constitution of the blood; unduly excites the heart and respiration; paralyzes the minute blood-vessels; increases and decreases, according to the degree of its application, the functions of the digestive organs, of the liver, and of the kidneys; disturbs the regularity of nervous action; lowers the animal temperature; and lessens the muscular power.

Such, independently of any prejudice of party or influence of sentiment, are the unanswerable teachings of the sternest of all evidences, the evidences of experiment, of natural fact revealed to man by experimental testing of natural phenomena. If alcohol had never been heard of, as nitrite of amyl and many other chemical substances I have tested had never been heard of by the masses of mankind, this is the evidence respecting alcohol which I should have collected, and these are the facts I should have recorded from the evidence.

This record of simple experimental investigation and result respecting the action of alcohol on the body were incomplete without two other observations, which come in as a natural supplement. It will be asked: Was there no evidence of any useful service rendered by the agent in the midst of so much obvious evidence of bad service? I answer to that question that there was no such evidence whatever, and there is none. It has been urged, as a last kind of resource and excuse, that alcohol aids digestion, and so far is useful. I support, in reply, the statement of the late Dr. Cheyne, *that nothing* more effectively hinders digestion

than alcohol. That "many hours, and even a whole night, after a debauch in wine, it is common enough to reject a part or the whole of a dinner undigested." I hold that those who abstain from alcohol have the best digestions; and that more instances of indigestion, of flatulency, of acidity, and of depression of mind and body, are produced by alcohol than by any other single cause.

This excuse removed, there remains none other for alcohol that is reasonably assignable except that temporary excitement of mind which, in spite of the assumption of its jollity and happiness, is one of the surest ultimate introductions to pain and sorrow. But if there be no excuse favored by scientific research on behalf of alcohol, there is sufficient of appalling reasons against it superadded when the pathological results of its use are surveyed upon the physiological. The mere question of the destructive effect of alcohol on the membranes of the body alone would be a sufficient study for an address on the mischiefs of it. I can not define it better, indeed, than to say that it is an agent as potent for evil as it is helpless for good. It begins by destroying, it ends by destruction, and it implants organic changes which progress independently of its presence even in those who are not born.

EXPULSION OF THE ENEMY.

I would venture now for a few minutes to pass from narrative of fact to invite attention to the question of the means that are before us for expelling from our homes, from our nation, from the world, an enemy that is so subtile and destructive.

The time has come when that expulsion is the duty of every man who is bold enough to fee that he is his brother's keeper, not less than the keeper of his own selfish interests and desires. The period of silence on this subject has passed; the period of ridicule has passed; the period of fear has passed. The period for united common work amongst all classes of society against the common foe has come.

As I touch this question, I ask myself—What has influenced me to take part in this cause? I answer—The facts I have observed in regard to the action of alcohol on the animal body; the facts of its utter uselessness; the facts of its deadly evil. I argue thereupon that if I, who had no bias against this agent, who was taught indeed in schools of science and from lips I reverenced, that the thing was a necessity of life; if I, thus trained, can be brought by new light to see the actual truth, and to be moved by it, so can all, except those who are so enslaved that their fetters have become an inseparable part of their existence.

I argue further on this, that the primary duty of all who would join in the war of expulsion of the common enemy is to teach, proclaim, demonstrate the same facts as I have to-day, with other such persuasions as may be adapted to the mind, and, I may say, to the heart, of him who is being taught. Specially would I urge that the young should be thus impressed. That in every Board school of England there should be a class beyond the three R's—a class where the claims of temperance *should be* impressed on the scholar with all the *force of scientific* instruction. If from the present

Conference this one suggestion could find its way into practical working, we shall not have met today in this great seat of learning in vain.

POWER OF EXAMPLE.

The next advance toward the great reformation we have in view is to place side by side with the propagation of truth the example of truth. I have done something in this crusade by my work as a teacher; but the work would be badly supported indeed if it were not seconded by the practice of that which I have taught. To say to a man who is wavering, who believes the teaching of abstinence to be right, and who yet fears to try it, I, the teacher, can do without the agent you trust in, can work better without it, can live better without it, can live much happier without it, can feel that what I once thought to be a necessity would now be an incumbrance; to say this is to be strung up to the very heart, is to feel the argument strung up to the height of tension, and every word an arrow going straight home. To be able to do less than this is to act "doubtingly," and to experience what the Lord Protector so truly defined—"whatsoever is so is not of faith; and whatsoever is not of faith is sin to him that doth it."

THE MODERATION FALLACY.

This thought leads me to add a word on what is called the practice of moderation in the use of alcohol. I believe the Church of England Temperance Association is divided by two lines, one of which marks off total abstainers, the other moder-

ate indulgers. I am one of those who have once been bitten by the plea of moderate indulgence. Mr. Worldly Wiseman, with his usual industry, tapped me on the shoulder, as he does every man, and held a long and plausible palaver on this very subject. If I had not been a physician he might have converted me. But side by side with his wisdom there came fortunately the knowledge, which I could not, dare not, ignore, that the mere moderate man is never safe, neither in the counsel he gives to others, nor in the practice he follows for himself. Furthermore, I observed, as a physiological, or, perhaps, psychological, fact, that the attraction of alcohol for itself is cumulative. That so long as it is present in a human body, even in small quantities, the longing for it, the sense of requirement for it, is present, and that as the amount of it insidiously increases, so does the desire.

On the other hand, I learned that the entire freedom from the agent controls entirely the desire. That he who is actually emancipated is free. But that he who has a single link of the tyrant on his sleeve is still a slave, on whom more links are attached with an ease that gives no indication until the limbs are bound.

LEGISLATION AND THE PERMISSIVE BILL.

A man of science trusts, naturally, to the development of truth and to progress out of natural growth of scientific labor. He feels but secondary sympathies with the mere legislator who so often, *in the present* grossly empirical phase of his labor, *legislates in* darkness and in backward movement

toward ages darker than his own. My mind, therefore, has been more directed to the educational part of the alcohol question than to the legislative. Yet I could not close this address without recurring a moment to what I have already said, viz., that the time has come when the Parliament of this country must in earnest legislate for the suppression, at least in part, of that national folly and disgrace—the raising of national funds from national degradation. It can not surely be long now that a free government will extract its resources from the graves of its people!

It is impossible to ignore these truths, and so, as legislation is forced on the attention, we who are in the forward ranks as teachers must guide the uninformed to that legislation which we consider wisest for the moment, most practicable, and most possible. For my part, at the present moment, while keeping up perfect freedom to accept any other measure that may be suggested or may occur to one's self, I see nothing better in the way of proposed legislation than the Permissive Bill. Were I in the House of Commons, I should, in the absence of a better and more comprehensive measure, give it my most earnest support. It would, as the law of the land, do more to remove temptation than anything else I can conceive possible; and what this means let all who are influenced by temptation declare. Those who are not influenced need not vote: they will do no harm.

CONCLUSION.

In summary:—The grand effort for us all to make is to stand firm, in precept and example, by

what is right, and to proclaim the right without dismay or fear.

Once, while the thunder of a great conqueror was playing on a doomed city, there stood in that city, in calm repose, a poor scholar speaking to a few earnest students words which, far mightier than the cannon of the conqueror, penetrated his nation, lifted it up, and helped to make it what it now is, the conqueror of the conqueror. Let every son of temperance plant these words in his mind and heart, and he, too, shall conquer the conqueror.

"To this am I called! to bear witness to the truth. My life, my fortunes, are of little moment. The results of my life are of infinite moment. I am a priest of Truth. I am in her pay. I have bound myself to do all things, to venture all things, to suffer all things for her. If I should be persecuted for her sake; if I should even meet death in her service; what great thing shall I have done? What but that which I clearly ought to do?"

THE

ACTION OF ALCOHOL

ON

THE MIND.*

I AM tired of hearing the sound of my own voice on this all-absorbing topic—the action of alcohol on the living body; and when I recall the fact that every day, as certainly as it comes, brings to me a new invitation to hear myself and to be heard again, I feel what an indulgent auditory the British public must needs be. At the same time, I can not conceal, and no friend of true temperance could wish to conceal, an inward and deep satisfaction in the fact that so many persons are asking for new light and more light on this great subject. Neither, when the extent of the subject comes under review, is there any cause for wonder that so much repetition of statement, from those who are the foremost advocates of temperance, should be called for.

The advocates are few, they may be counted by their fifties. The inquirers are numerous, they may be counted by their millions.

Personal considerations, therefore, put aside, I

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* An Address delivered at a meeting of the Cambridge Church Temperance Association, and the Cambridge University Temperance Union.

rejoice in the call even for repetition of statement, because the demand indicates an awakening feeling which is of the happiest omen. When millions of people had to be converted to temperance in the face of opposition on all sides, the labor looked dismal enough. Now that the opposition is melting away, and the millions are earnestly seeking for the knowledge which leads to conversion, the labor, heavy and severe still, is edged with brightness.

Therefore, on the whole, I am glad to have occasion to speak again. I am specially glad to speak in this place, and, considering where I speak from, I will try to repeat myself as little as possible. With this intent, it will be well for me to endeavor to present to you a side of the alcohol question which has not, as yet, been dwelt on in so special a manner as it deserves.

MEMS. ON PHYSICAL ACTION OF ALCOHOL.

In my address delivered last year in the Sheldonian Theatre, at Oxford, I spoke almost exclusively on the facts connected with the action of alcohol on the body. It seems to me befitting if on the present occasion I touch more particularly on the facts connected with *the action of alcohol on the mind.* Before, however, I pass to this particular topic, it may be advisable to epitomize the matter of the Oxford essay, so that those, and they must be many here, who have not read that essay, may follow the present argument dealing with mental phenomena, from the argument which was based on the study of physical phenomena.

In that essay I endeavored to show, from the ex-

perimental evidence I had previously collected, that alcohol, when it finds its way into the living body, interferes with the oxidation of the blood; that it interferes with the natural motion of the heart; that it produces a paralyzing effect on the minute circulation of the blood at the point of the circulation where the quantity of blood admissible into the tissues ought to be duly regulated; that habitually used in what some—indeed, the majority of those who indulge in alcoholic drinks—consider a moderate quantity, it impedes the digestive power; that it induces organic changes ending in organic disease of vital organs, such as the liver and kidney; that it leads to similar changes in the great nervous centers, and to destruction of nervous function, ending in paralysis.

I further indicated, in the address to which I refer, that alcohol has no claim whatever to be considered a supporter of the animal temperature, and no claim whatever to be thought a supporter of muscular power. On the contrary, that, from the moment a physiological effect is produced in the body by alcohol and onwards, so long as the effect is kept up by the addition of the agent to the body, the animal heat, the nervous control over the muscles, and the independent power resident in the muscles themselves, begin and continue to decline, until at last the body, cold and senseless, falls to the ground, checked only by its own utter helplessness, and, as it were, living death, from imbibing the last drops that would make the death absolute. From all these facts I reasoned that alcohol could not, in any sense whatever, be, scientifically, set down as a

food for man or any other animal; that it could not be set down as a necessity for man or any other animal; that, useless as a food, it is mischievous as a luxury; and that, indulged in as a luxury, it is far too dangerous a destroyer to be entrusted to the general management of mankind, or to the hands of those who, because of its luxurious temptations, fall under its power.

At the present time very few persons are inclined to contend against these propositions. There are some who are strongly inclined to qualify them, and who, under the desire to please the multitude by supplying it with excuses for retaining an old-established luxury, are ready to find, or rather to invent, excuses for it. The falsity of the excuses is pretty generally felt, even if it is not avowed, and it is a pretension which none who know the weakness of human nature are surprised to see advanced.

EXTRA-NEEDS ARGUMENTS FOR ALCOHOL.

The whole defense of alcohol rests indeed now on what is called the extra needs of man as a thinking and reasoning being, as a something more than a mere animal. The arguments that are adduced on this score run somewhat in the following order:

1. Alcohol, it is admitted, may not truly be a food in the gross and economical meaning of the term. It may not supply any structure-forming material; it may not yield any force for the movements of the body; but it is nevertheless a stimulus, and, in so far, a food for the mind. The lower animals do not want *it—are, in fact,* without any shadow of a doubt, *better without it.* But then, they have no mental de-

pressions and exultations like man. They feel none of that tension of mind which man feels in this toiling, struggling age, and which is doubly required to meet the exigencies; to meet the extra work; to enable the mind to work at a push, to quicken the flow of thought, to impel the pen, to push the pencil, to stimulate the speech, to guide the hand. The writer who must, by a stern necessity, prepare a leader by four o'clock in the morning on the debate that had just closed; the artist who must, by a stern necessity, finish his long-delayed master-piece before that terrible first week in April; the orator lecturer, preacher, player, singer, who must appear before his audience at some inevitable hour; the surgeon who must perform with unflinching skill some surgical operation; the engineer who must do some daring deed of experiment or practice—these men—so runs the argument—what are all these to do in their great emergencies if they be not supplied with the stimulus to exertion which alcohol supplies? Let it be granted that the stimulus is bad. Is it not a necessity? That is the question.

2. Alcohol, it is admitted, may not be a food, but it is still necessary for another class of men: for men who are of excessive nervous temperament, and who are too anxious and fearful about themselves to venture to leave off what they have been long accustomed to receive and accept as a necessary part of their daily subsistence. The reasoners on the value of alcohol to the mind will agree readily enough with the statement that the wretched people who, upon being cast into prison, are suddenly cut off from all *stimulants*, suffer no injury from the de-

privation. But, they add, "these men and women of whom we speak are not prisoners; they are not of the same stolid, hopeless, sensual class; they are more susceptible to sudden changes, and the dread of deprivation and the sense of deprivation is therefore exceptionally severe, so severe it can not be borne." What, then, are all these to do? It may be true that alcohol does them some harm. Is it not, however, a necessity? That is the question.

3. Alcohol, it is admitted, may not be a food, but there are men and women who, by steady practice, have attained such an appetite for it, such a liking for it, that they can not by any effort do without it. They can not touch food with any sense or desire for it without alcohol. The food is insipid unless it is spiced with alcohol. The food will not digest unless it be commingled in the stomach with alcohol. Life feels a burden unless it be enlightened and enlivened by alcohol. Life is not worth having unless it be cheered, and, for a time, at all events, made passable by the sweet stimulus. If these for a time attempt to abstain, the merest sight of their old friend renews their desire and rekindles their love. They are like Robinson Crusoe's man Friday, who found the flesh of goats sustaining enough, but hankered to fall back on cannibal fare when he unearthed a dead enemy. What are all these to do? Alcohol most probably does them harm. Is it not a necessity? That is the question.

4. It is admitted that alcohol may not be a food, but there are multitudes of persons who, understanding nothing accurately on this point, are determined not to alter their opinions as to the uses

or pleasures of alcoholic indulgence by reason of any new fact or suggestion. They have known the use of alcohol all their lives: their fathers and forefathers knew the use of it. They have become so habituated to the filling and mixing and emptying of glasses, the drawing of corks, the turning of taps, the holding-up of liquors to the light, the wishing good healths, the tasting of samples, and the talking of vintages, that, in the absence of such automatic contrivances, they could have no satisfaction or pleasure of existence. They have known people who have drunk freely every day of life, and have lived notwithstanding to an extreme old age. To depart from the drinking of alcohol is to break up a fine old social custom, to reduce hospitality, to lessen the capability of expending a good income in a free and generous way, to injure the interests of important commercial communities, to cast away as useless the great gifts of nature, and to condemn a good practice because, like all good things, it is open to abuse by the reckless and unwise. What are all these to do? Alcohol may have a bad side. Is it not to them a necessity? That is the question

5. It is admitted that alcohol may not be a food, but is it not a luxury which at certain festive seasons may be enjoyed and even used with some advantage? This argument has more than once been placed before me, and it is a favorite argument of a select few who, following in the wake of Sir Walter Raleigh, insist that wine should now, as of old, do no more than minister to the feast. On such occasions it should be taken just to make glad the *heart, no more.* The joyous feasters should learn

the true bounds of safety. Thereby they are fortified, and are taught by their principle to obey a higher law than those obey who, weakly apprehensive of danger of excess, must abstain altogether. Better is it to face and wrestle with and conquer an evil than fly from it meanly. Those who meet to be merry must have something that will excite to merriment. What are they to do? Alcohol may not in the end be good for them. But, for their passing hour, is it not a necessity? That is the question.

6. Alcohol may not, it is admitted, be a food; but is it not true that there is a natural, instinctive desire, if not for alcohol, at least for some equivalent substance? This is an argument which many adduce and insist on as an article of belief. There is no tribe, say men of this school, there is no tribe so savage but that it has its stimulant of some kind. The Turk takes his opium; the native of Kamschatka his amanatine; the East Indian his haschish; the Styrian his arsenic; the Mexican his agave; the Indian of the Andes his yerba de nuacca; the primitive West Indian, whom Columbus himself discovered, his tabac. Is such an instinct, so universally and yet so diversely spread, to be ignored? What are people possessed of such an instinct to do without alcohol? Is it not to them a necessity? That is the question.

In adducing these arguments in favor of alcohol from the psychological side of the alcohol question, I am doing no more than repeat what is almost daily spoken to me on the subject. I might with perfect correctness introduce much more argument

on the same side. I might bring forward the expressions of those very numerous persons who protest against any abstaining reformation at all, because such reformation would check and restrain by example and social influence their own gratifications. I might bring forward the expressions of the great indifferent on this question, who want to know what the noise is all about, and ask what it can signify to them whether a little more madness, a little more crime, a little more disease, a little more want, a few more sins of all kinds all used in each degree, should stand revealed as due to one prevailing, and, by consent of ages, all but universally recognized instrument? Why should such unpleasant subjects be disinterred, making day, as well as night, hideous?

These and others I shall let alone, that I may bestow more time on worthier objects: on those who have something more than base selfishness of nature to inspire them; on those who, in the many modes I have recorded, feel that they have, at the bottom of their resistance to abstaining temperance, the serious argument of necessity.

ARGUMENTS CONTROVERTED.

Touching, then, the first class of argument—the argument which declares for the necessity of alcoholic stimulation on the ground of the necessity of stimulus to feed forced growth of thought—the reply is as direct as need be. The argument is rotten even on its own basis. Forced growth of thought is itself a cankered growth, a fungus which springs up in the night to die and dry away in the

morning, sinking before the light. Life in its fullness is such an ephemeron it is hardly possible to extract more than one or two really good things out of a devotion extended to them through all the active stages of the ephemeron. What, then, can be the true value of that work which is forced to the extent of striving to do something of lasting influence each day of life, and which, failing to do what it aims at by natural means, mainly seeks for aid from that which is unnatural, wearing, wasting, wanton, wasteful? In mental, as in physical action, wanton waste makes woful want.

But, setting aside this basic reason against development of thought by means of stimulation from alcohol, there is another falseness, in the actual results of forced work on the worker. The man who is driven headlong against invisible, all-resistant time, is actually not aided by the process of stimulation. If I reduce the pendulum correction or the regulating movement of a clock or watch, I make the instrument seem to tell the hours faster and seem to do more work. But I know it does not tell the hours so correctly as it would do if I let it work properly balanced—that it does not do more work unless it be more frequently wound up, and that, made to do more work by more frequent windings up, it wears out and becomes an old and useless watch so much the faster. It is precisely the same with respect to the body. If, by reducing the balancing power of the vessels which regulate the supply of the blood to my brain, I permit a more rapid current of blood to feed my brain, I may for a time think more rapidly and express

myself with more apparent energy. It is clear, however, that under these circumstances I do but exhaust more quickly, require to be wound up more frequently, and wear out more speedily.

Nay, something worse than all this actually occurs to those who seek for mental vigor in the process of releasing the balance of supply of blood to the centers of thought. When the brain is in the whirl of rapid thought, induced by alcohol, or induced, indeed, by any mode of excitement, there soon comes a time when the very rapidity of motion is a cause of obscurity. The rapidity of nervous action is rebuked by negation of result. As in a "wheel of time," when the motion of the wheel is moderate, we discern clearly different colors, but see them all in one single color when the motion is increased, so in the wheel of thought, when it spins too rapidly, imagination, fact, memory, judgment, feeling, order, expression—all these primitive attributes, which make up the spectrum of the mind —run into each other, causing confused ideas, meaningless labor, irritable exhaustion.

I record these results as matter of daily experience in observation of men. Men are as much observable phenomena as less animate things, if you will but carefully observe them. Minds can be read as well as bodies by any skilled observer who will take the trouble to learn the method of reading, and will steadily maintain the practice. And the result of such accumulated experience is that those men who, in this sadly oppressed age, do most work, best work, soundest work, hardest work, and, in the end, quickest work, are the men

who, avoiding stimulants under all contingencies and pressures, trust to rest and natural food for the power that is required to carry them most safely through the ordeal.

Yet another side of this reply to the argument of necessity, now before us. The result of accumulated experience shows that they who, by stimulation, force the growth of thought; they who daily relax the vascular control over their centers of thought; they who reduce that unconscious grasp which Nature, all-wise and wonderful, has placed in automatic concealment, and out of the capricious control of our constantly-changing wills; that they who indirectly defy Nature in this her imperative rule for healthy life, pay the forfeit for their temerity or ignorance. These are the men who break up at their work; these are the men whose suns go down at noon; these are the men dying in this day at a rate alarming to contemplate. These are the men of whom it so often is said, "Whom the gods love die young." Pernicious falsehood! Whom the gods love die old; live out in usefulness and happiness their allotted circle; die without rending the hearts of any by unnatural strain of sorrow; die as they sleep, knowing nothing of the pain and conscious bitterness of death.

For the work that comes of the mind and that comes out under pressure no taste of alcoholic stimulation is necessary. Every such taste is a self-inflicted injury, and, what is more, an accumulating injury. The dose of alcohol which spurred the thought of to-day must be slightly increased to spur the thought of to-morrow to the same pitch.

So on and on the evil goes, until at last the simple, and, as it was called, harmless dose, rises to the poisonous dose; until, with unnerved limbs, faltering memory, dulled imagination, estranged feeling, enfeebled or even dismantled reason, the victim falls. Of all men, brain-workers are the men least able to bear up against the ravages of alcohol. Of all men they are the most liable to be deceived and played upon by this traitor, who enters the most precious treasury, the citadel of the mind. I hold that man as prematurely mad who defends the use of alcohol for himself on this ground of necessity. I hold that man as criminally mad who, knowingly, prescribes alcohol on this foundation.

Touching the second class of men to whom I have referred—those who are nervously affected in favor of alcohol and who fear to abstain—the argument that requires to be applied is of an assuring rather than of a disputative character. The influence of alcohol on natures of this class is exceedingly potent, and, as it happens that such natures are often conscientiously sensitive, and charged with desires to act rightly, they become exceedingly difficult to assure. If these feel, as is commonly the case, that the constant taking of alcohol is doing them an injury, that the enemy is becoming more necessary to their support, and is also doing them physical wrong, they for a time discard him. So soon as they give abstinence a trial, however, the void they experience is most painful to them, and a real anxiety. Then every symptom they experience, from whatever cause, they attribute to abstinence. Symptoms which they

often experienced before, they now attribute to abstinence. They know also that they are making an experiment which places them under the marked observation of their relatives and friends, and every adverse remark is another cause of fear and dismay. When they have to perform a special and painful duty, for which they have previously been accustomed to fortify themselves by a glass or two of wine, they miss the stimulus with a feeling of positive terror as to the result of such temerity. I have known a clergyman in this state who felt he must actually die in the pulpit if he omitted the glass of sherry with which he was long accustomed to charge himself before leaving the vestry. I have known a doctor dread the ordeal of a serious professional duty in the absence of the usual artificial provocative to action.

In these states of mind many abstainers, during their novitiate, go to consult their medical adviser, and put such a case before him that he is led to sympathize with them, and, if he be not fully conversant with the position, to suggest to them that they should return to alcohol forthwith. They now return to the old path, backed, as they say, by medical opinion and advice. They declare for themselves, and others declare for them, that in their case total abstinence has proved a total failure, and thereupon the cause receives a blow which is as mischievous as it is unjust.

I admit freely that it is a most difficult thing to treat this mental state. It is so purely mental that it baffles the most careful treatment. If the physician meet it by prescribing alcohol, as alcohol it

self pure and simple, in effective doses, he even then may not succeed. The mind of the affected will not care for alcohol in that form, but for the one particular form of wine, of brandy, or whisky to which it is habituated. In fact, the physician is combating a moral derangement, and his dilemma is most trying. If he maintain the soundness of the principle of abstinence, and give every assurance of safety, he often fails in carrying conviction, since he is arguing with the most subtle and obstinate of human frailties—fear. If he give way and yield his assent to the return to the assumed protecting and sustaining enemy, he constantly gives up his too willing patient to the danger of further encroachment, to confirmed adhesion to danger, and to certain injury.

And yet, ladies and gentlemen, in these cases, in all but the most exceptional instances due to physical disease, the course to be insisted on is, after all, clear, and that course is to enforce the abstinence. Nothing is wanting but time to assure and sustain the most nervous and timid nature in the absolute safety and advantage of abstinence. In a few weeks there is hope; in a few months there is victory. A few repetitions of trials of strength without alcohol confirm the effort, and with the certain confirmation the new habit of self-trust and confidence becomes the natural condition. Like one who, having learned to swim, has given up the belt or other artificial support, and wonders why he ever needed such unnecessary assistance, so the perfected abstainer wonders why he ever required sustainment from alcohol.

Touching the mental condition of those who are held to alcohol by the tie of appetite for it and fondness for the surreptitious cheeriness which it seems to impart, the same kind of argument against the indulgence applies as does to the condition of the timorous. Indeed, the two conditions are not infrequently in combination in the same person. It must, however, be said of them in whom the liking is strongly developed that they are almost invariably in actual danger. They have become the slaves of the tyrant. They tell you with mock triumph, what their own hearts assure them is false, that they prefer to live a shorter life if it be but merrier. In this stage they are just on the verge of that mental incapacity, by physical disorganization, from which nothing but total abstinence can save them. Most commonly they sink deeper and deeper, and die from organic disease.

Touching the fourth and fifth classes of persons to whom I directed attention—those who hold to alcoholic drinks with automatic consistency and prejudice of custom, and those who hold to them as a means for mere recreative gratification—their mental condition is of a kind that can only be reached by clear and often-repeated statements of the truth respecting alcohol. Many of this class are acting simply under the impulse of ignorance, or the feeling of good nature, and though they are slavish to prejudice, they are not inaccessible to reason. These have to be educated, the first by a long, the second by a short course, and they are *now* being educated hour by hour and day by day. *This fact* is apparent in every phase of social life.

At the dinner-table wine is no longer pertinaciously and almost vulgarly forced on every guest, as once it was; neither is every total abstainer a marked man, to be made the unhappy victim of rude jest because of his conscientious determination to live according to natural rule. The atrocious calumny against Nature that she sent wine for the use of man is certainly less frequently declared; and the idea that men who do not drink can not be merry of the merriest, as well as wise of the wisest, is being so determinately corrected by practical observations as to be passing into ignorant badinage.

Still, much information has to be instilled into the masses before a true and proper frame of mind is acquired in respect to alcohol, socially considered. That terrible habit of false hospitality which presumes that a man has not done by his neighbor as he would be done by until he has asked him "what he will drink," sadly needs reforming. The insane idea that every new task and every renewed rest must be supplemented and complemented by a glass of something strong, sadly needs reforming. That equally insane practice of transacting every bit of business by a preliminary draught of the great mental disqualifier for all business, most solemnly calls for reformation. The notion that everybody who is ailing or exhausted must at once be dosed with some stiff cordial, has to be banished not only from the heart, but from the mind. For these reforms we can only wait, and teach, and recast a mental constitution which, erring only from the heart, admits of definite improvement.

Touching, *lastly*, the argument of those who

maintain that the desire for alcohol rests on an instinctive basis, the reply is easy. The historical evidence which is adduced in favor of the instinctive view breaks down on all fours. There have been nations which have never shown the instinct described. The lower animals, which are mainly instinctive, have never shown the instinct. Those nations which have exhibited a predilection for some foreign agent influencing the natural life have exhibited no consistent method of selection of such an agent. Some have used a stimulant; others a pure narcotic; others a direct mental depressant. All have taken, by mere accident of place and mode of life, the agent which they have introduced into common usage. All, moreover, who have thus temporized with life have been but as the children of the world, whose childish instincts in matter of cooking, of dwelling, of fighting, of playing, the most rabid alcoholic advocate would scarcely care to follow. In short, this argument of instinct is mere excuse for sake of excuse, and when it is tried by the facts of current experience, with or without the history of the past, it is nowhere. The present experience, and I believe the most ancient experience also, is clear as daylight—viz., that the habit of drinking all strong drinks is an acquired habit; that all young children instinctively dislike such drinks and shrink from them; that much training is required to beget the liking for any one drink; and that no alcoholic scholar is ever so accomplished as to accept every drink with equal favor. What is more, it is obvious not only that Nature *has provided* no instinct in any young animal for

alcohol, but that she has not herself provided the alcohol for the instinct. Measured by the perfection of her other designs, and her unerring mode of fitting one thing into another when she intends both to act together, it is, I think, inconceivable that she would have forgotten both the instinctive desire for a particular agent, as well as the agent itself, if she had designed that man should require the agent either for his wants or his pleasures.

DIRECT INFLUENCE OF ALCOHOL ON THE MIND.

This discourse on the action of alcohol on the mind would be incomplete if it did not add something respecting the direct influence of alcoholic indulgence, in its various degrees, on the mental powers, reasoning and instinctive. I would, therefore, offer a few concluding notes from derived practiced observation on this point.

I think I see three distinct effects of alcohol on the mind, which effects I shall term the superstitious, the demonstrative, and the destructive. They are as distinct as any of the physical effects which I have traced, and I daresay they rest on a physical basis, but they admit of study and description as mental phenomena, apart from the intricacies of their origin.

The *superstitious* feelings engendered or excited by alcohol have the widest range. They extend to the whole of the alcohol-drinking population, but are usually most pronounced amongst those of the population who are most moderate, or, to use their own words, most strictly temperate in their habits. These, at all events, express most clearly the effects

I am now denoting. They tell you, with a kind of regret, that while they are fully cognizant of the evils produced by alcohol, of the desolation produced by it, the pity is that such a potent cause of evil can not be safely given up. They themselves would give it up if they could, if they had the resolution, but to them it is so necessary. They can reduce it to any ridiculously small amount, but they must have a little, or they would break down. I was sitting at dinner, during the present season, by the side of a gentleman whose mind was fully imbued with this impression. "You see," he said to me, "I am almost, but not quite, of your persuasion, for that is my daily potion of wine, and that has been my potion for over twenty years." Thereupon he poured out in a glass about two ounces of a villainous compound which is publicly sold under the name of sherry. "Well," I replied, "that is not more than from three to four drachms of alcohol. It will, I confess, do you neither good nor harm, because there is really not enough to produce a physiological effect on one of your age and size." "Nevertheless," said he, "I couldn't do without it." "What effect has it?" I inquired. "What effect, for example, does that which you have just taken produce?" "Ah," he responded, "this is common wine, very bad wine indeed, and promises, I fear, to give me heartburn, as bad wine always does; a sort of acidity, I suppose, which such wine invariably causes in me. Still I couldn't do without even this. I should miss something; I shouldn't sleep *without it;* but what it does for me I really do not *know. The* worst it does is the heartburn and that

is usual except at my own table, where I get the wine that I know suits me." And then he went off at a tangent to say that it was so sociable to be able to take a little wine; that when you are at Rome you must do as Rome does; that more people injure themselves by eating than by drinking; that this is an artificial age, in which artificial means are demanded; and that if such a magnificent gift of God to man as wine—including, I suppose, the sherry which every one at the table was heartily cursing—were to be cast aside, what next would be tossed away and despised? As a last and crushing fling, he threw at me the latest utterances which Mr. Worldly Wiseman—I beg pardon, I mean Dr. Worldly Wiseman—for since I last spoke of that worthy, I see he has taken up the doctor's degree in physic—which Dr. Worldly Wiseman has said in a professional point of view respecting alcohol, and from which he deduced that a daily dose of alcohol which would of a certainty shorten the lives of nine-tenths of those who indulged in it might, on my own evidence, be taken with impunity as well as pleasure. Certainly he had not read what I had written, but this is what he understood, and he believed that some understood the original facts of an author better than the author did himself.

This is a fair sample of the superstition, of the firm belief in the unreal—always weak, plausible, selfish, illogical—which alcohol excites in the minds of men and women who are accustomed to its use. The same superstition once hung about charms and amulets, and is hardly dead yet. In this superstition lies the secret power of that moderation fallacy by

which the public body is inoculated with the persistent plague of drunken-mania. It is the origin of all the evil.

The *demonstrative* effects of alcohol are shown in the proceedings of those who confessedly or concealedly indulge in alcohol beyond what can be called, in any sense, moderation. Such persons are not, of necessity, drunkards; they may only be free in the use of alcohol, or reckless in its use. But, as if they were so many specimens of experiment, they are demonstrations of its effects on the mental as well as the physical constitution.

An analysis of the condition of mind induced and maintained by the free daily use of alcohol as a drink, reveals a singular order of facts. The manifestation fails altogether to reveal the exaltation of any reasoning power in a useful or satisfactory direction. I have never met with an instance in which such a claim for alcohol was made. On the contrary, confirmed alcoholics constantly say that for this or that work, requiring thought and attention, it is necessary to forego some of the usual potations in order to have a cool head for hard work.

On the other side the experience is unfortunately overwhelming in favor of the observation that the use of alcohol sells the reasoning power, makes weak men and women the easy prey of the wicked and strong, and leads men and women who should know better into every grade of misery and vice. It is not poor repenting Cassio alone who cries out in agony of despair, "O, that a man should put an *enemy into* his mouth to steal away his brains!" It *is thousands* upon thousands of Cassios who say the

same thought, if not the same words, every day, every hour. I doubt, indeed, whether there is a single man or woman who indulges or who has indulged in alcohol who could not truthfully say the same; who could not wish that something he had unreasonably said or expressed under the excitation from alcohol had not been given forth.

If, then, alcohol enfeebles the reason, what part of the mental constitution does it exalt and excite? It exalts and excites those animal, organic, emotional centers of mind which, in the dual nature of man, so often cross and oppose that pure and abstract reasoning nature which lifts man above the lower animals, and, rightly exercised, little lower than the angels. Exciting these animal centers, it lets loose all the passions, and gives them more or less of unlicensed domination over the whole man. It excites anger, and when it does not lead to this extreme it keeps the mind fretful, irritable, dissatisfied, captious. The flushed face of the red-hot angry man, how like it is to the flushed face of the man in the first stage of alcoholic intoxication. The face, white with rage, and the tremulous, agitated muscles of the body, how like both are to the pale face and helpless muscles of the man deep in intoxication from alcohol. The states are not simply similar, they are identical, and the one will feed the other.

From this same mode of action, alcohol administers to the fears of mankind. The term "pot valor," vulgar as it is, how faithfully it expresses the truth. Before this paralyzing influence the *reasoning power*, which is the essence of resource

the same agent inflicts on the mind. Forty per cent., the learned superintendent of Colney Hatch, Dr. Shepherd, tells us, forty per cent. of those who were brought into that asylum during the year 1876, were so brought because of the direct or indirect effects of alcohol. If the facts of all the asylums were collected with equal care, the same tale would, I fear, be told. What need we further to show the destructive action of this one instrument of destruction on the human mind? The Pandemonium of drunkards: the grand transformation scene of that pantomime of drink, which commences with moderation! Let it be never more forgotten by those who love their fellow-men until, through their efforts, it is closed forever.

SHALL WE USE WINE AND BEER?

QUITE a large number of persons believe that beer and wine are harmless; others that they are really beneficial, strengthening the body, enlivening the mind, and producing health and long life; others still that they prevent the use of distilled liquors, and so accept a lesser evil instead of a greater; while many, regardless of results, favor their use to gain votes to their party.

1st. Are these fermented liquors nutritious? Professor Liebig, the greatest chemist, not a foe to beer, said of Bavarian beer, which is considered the most nutritious and best: "We can prove with a mathematical certainty that as much flour as can lie on the point of a table-knife is more nutritious than eight quarts of the best Bavarian beer; that a person who is able to consume daily that amount (two gallons) of beer obtains from it in a whole year exactly the amount of nutritive constituents which is contained in a five-pound loaf of bread or in three pounds of flesh." That is, he must drink *twenty-three barrels* of beer to get as much nutriment as in a five-pound loaf of bread or three pounds of meat.

Of what is beer made? Dr. Dunn, of Boston, says, "of malt, hops, and water. The water is not food, the hops help preserve the liquor, but have no feeding properties, and malt is vegetated barley. In making gallon of beer six pounds of barley are used. This undergoes four processes—malting, mashing, fermenting, and fining. There were ninety six ounces of grain at first, now less than ten ounces. For the eighty-six wasted ounces you have gained three ounces of alcohol, which hinders digestion and poisons the blood. In a pint of beer, then, you have fourteen ounces water, part of an ounce extract barley, and nearly one ounce of alcohol."

Dr. Lyon Playfair, professor of chemistry in the University of Edinburgh, has analyzed a specimen of beer, and reports that of blood-forming matter it contains exactly one part in 1,666 parts.

Dr. Hassels, in one gallon of ale, containing 70,000 grains, says all the food of any kind is 1-70 pound of sugar.

What of wine? Dr. Lees says: "The albumen of the grape is valuable nourishment, but in fermentation becomes yeast, which is corrupting matter, while the sugar becomes spirit. The juice of the grape, before the decaying process of fermentation, is healthful. The grape itself

contains no fermented wine, its very composition being such as to carefully exclude the air, and thus prevent fermentation. Wine is, of course, worse than beer, because in its pure state it contains from 13 to 23 per cent. of alcohol, while beer contains from 6 to 12 per cent."

If such in its pure state, what shall we say of it in its adulterations?

Says Dr. Fowler, President of Northwestern University: "The whole Champagne district produces 800,000 baskets of wine per annum. Russia consumes 160,000, France 162,000, England 220,000, Germany 146,000, leaving for America 120,000 baskets yearly; and yet we consume more than 1,000,000 baskets yearly, so that we alone use 200,000 baskets more than the district produces. Only 30,000 barrels of wine are produced on the island of Madeira. We buy 50,000 here. There is sold one hundred times as much port wine as is produced. A gallon of the real juice is made into five by the aid of beet whiskey, elderberry juice, and water. This in London is made ten by potato whiskey, red saunders, and other drugs. In New York this becomes twenty by strychnine or belladonna, whiskey, opium, or logwood. In the wholesale it becomes forty by the same agencies. In the retail hands eighty by tobacco-juice, water, burnt sugar, aloes, and sugar of lead."

In the adulteration of beer, Dr. Dunn says, "sugar, honey, and liquorice are used for malt; alum, opium, gentian, quassia, aloes, tobacco, nux vomica, and immense quantities of coculus indicus are used for hops, and saltpetre, lime, marble-dust, nut-galls, bruised green copperas, etc., to prevent acidity."

Do we want the duties on foreign wines lessened, that more of such stuff may come into general use?

2d. Do they enliven the mind?

James Parton writes: "Close observers of the famous beer countries, such as Saxony and Bavaria, where the beer is pure and excellent, speak of it as the chief enemy of the nobler faculties and tastes of human nature. The surplus wealth, the surplus time, and the surplus force of these nations are chiefly expended in fuddling their brains with beer."

De Quincey says that "wine disorders the mental faculties and unsettles the judgment."

3d. Do they strengthen the body?

Prof. Liebig says: "Wine is quite superfluous to man. It is constantly followed by the expenditure of power."

There is abundant testimony by Dr. Edward Smith, F.R.S., Sir A. Carlysle, a celebrated surgeon, Dr. Inman, of Liverpool, and Dr. Lees, that the idea so prevalent among American mothers that beer-drinking is strengthening to themselves and their infants is erroneous and injurious to both.

4th. Do they prolong life?

Dr. Lees says: "In France everybody drinks, young and old, male and female, and we find one centenarian among 369,000 persons; in the United States one in every 9,000. In the British army-reports from India it is found that alcoholic spirits killed 62 soldiers per 1,000, porter 27 per thousand, pale ale 12 in 1,000, or just double the natural mortality. In statistics of Glasgow hospitals for 1864, by Dr. Gairdner, mortality lessened exactly as the dose of alcohol or wine diminished. An average of 34 ozs. of wine in a given number of cases resulted in the death of 17 per cent. of patients; reduced to 2½ ozs., death-rate became 11 per cent. Of 209 children under 15 years of age treated without alcohol, not one died, though the same class of cases treated with stimulants had a mortality of 6 per cent.

5th. Do they lessen the use of distilled liquors, whiskey, rum, and brandy?

"Carlton," the correspondent of the Boston *Journal*, says: "England spends $100,000,000 on beer yearly. The poor who cannot find a place to sleep nights will have their beer."

Rev. Mr. Thayer, of Boston, says, from official reports: "More distilled liquors are drunk per capita in England now than were forty years ago, when the Ale and Beer Act was passed for the very purpose of lessening the use of distilled liquors. The consumption of distilled liquors has increased 175 per cent. in the last fifty years."

Recorder Hill, of Birmingham, a high authority, says: "The sale of spirits has increased. The establishment of beer-shops is universally denounced as a curse upon the land."

The report of the Convocation of Canterbury, published in 1869, which has ecclesiastical supervision of 14,000,000 persons (the committee consisted of six archdeacons, three deans, seven canons, and two prebendaries, all men of distinction), says: "This Ale and Beer Act, though introduced for the avowed purpose of repressing intemperance by counteracting the temptations to excessive drinking of ardent spirits, has been abundantly proved not only to have failed of its benevolent purpose, but to have served throughout the country to multiply and intensify the very evils it was intended to remove."

Dr. Fowler says: "Paris, where more wine is consumed than in any city in the world, 1,089,000,000 gallons yearly, consumes more brandy and other distilled liquors per head than any nation on earth."

Rev. Dr. Stone, of California, late of Park Street Church, Boston, says: "I had entertained a hope that the manufacture of pure wines and their introduction into general use would crowd out the gross strong liquors and diminish intemperance. I am now fully convinced that this hope was groundless and delusive. In wine-growing districts intemperance is on the increase, extending to the youth of both sexes."

In 1860 the United States used 88,002,717 gallons distilled liquors; in 1867 about 20,000,000 more than this. In 1860, fermented liquors, 161,126,900; in 1867 nearly 300,000,000 more than this. The increase of beer-drinking in the past decade has been 507 per cent. Why have not distilled liquors decreased? On the contrary, they have increased. The collections for internal revenue for 1872 on distilled liquors were about $49,000,000; in 1873 about $2,600,000 more. Beer $8,000,000 in 1872; in 1873 $1,000,000 more. Why did not the former decrease? Figures do not show it.

6th. Do wine and beer diminish intemperance, as their advocates claim, or do they promote drunkenness and crime? How is it in countries where they are most commonly used?

Mr. Peter T. Homer, of Boston, member of State Statistical Society of England, says: "The introduction of beer from Strasburg on the Rhine, Dantzic, and Bavaria, and its increased use in France, have multiplied greatly the number of drunkards in France."

J. Fenimore Cooper says: "I came to Europe under the impression that there was more drunkenness among us [Americans] than in any other country. A residence in Paris changed my views entirely."

Horace Greeley wrote from Paris: "That wine will intoxicate, does intoxicate, and that there are confirmed drunkards in Paris and throughout France, is notorious and undeniable."

Dr. Kirk, of Boston, says: "I never saw such systematic drunkenness as I saw in France during a residence of sixteen months. I never saw so many women drunk."

Dr. Warren, of Boston, seven years a resident of Germany, says: "Drunkenness is very common here."

The King of France, Louis Philippe, declared to Mr. Delavan in 1838: "The drunkenness of France is on wine."

"Lord Acton, Supreme Judge of Rome," says Mr. Delavan, "assured me that all, or nearly all, the crime of that city originated from wine." In the reign of Romulus it was decreed "that no woman should drink fermented wine under penalty of death, since he regarded the drinking of wine the beginning of adultery."

In Persia missionaries, like Revs. J. G. Cochran and Larabee, write home "that in the wine-making season the whole village of male adults will be habitually drunk for a month or six weeks. In one hundred and thirty houses some one was drunk in all save twenty houses, all giving themselves up to low songs and brutal quarrels, and this on wine."

Commissioner Wells says: "California, with her cheap wines so universally used, in the year 1862 sold fourteen times per head as much alcoholic stuff as Maine, and more than any other State."

Charles Dickens says: "The wine-shops are the colleges and chapels of the poor in France. It is in wine-shops the cabman is taught

to think it heroic to shoot the middle-class man who disputes his fare. The wine-shop breeds, in a physical atmosphere of malaria and a moral pestilence of envy and vengeance, the men of crime and revolution."

Rev. E. S. Lacy, of San Francisco, six months in a wine-growing section, says: "Here more intoxication was obvious than in any other place it was ever my lot to live in."

The editor of the *Rescue*, a California paper, says: "Wine-making in El Dorado has paved the way for poverty and drunkenness."

The editor of the *Pacific* says: "Wine has become as cheap as milk, and is as freely drunk, till many once sober men are growing habitually intoxicated. One leading man enumerated to us five of his acquaintances who, once noble men, are now drunkards through wine."

Beer-shops are almost universally whiskey-shops.

The Chief of Police of Boston reports in 1870 "out of 2,584 saloons only seventeen sell lager-beer only."

Judge Pitman, of Superior Court of Massachusetts, reports, "in New Bedford, a city of 22,000 people, after eight months of free beer, as compared with eight months of 1871, when it was restricted, an increase of *sixty-eight per cent. of crime and over one hundred and twenty per cent. increase of drunkenness*, and that in the short space of eight months."

Dr. John Todd, of Pittsfield, Massachusetts, says: "Beer demoralizes awfully. It makes the men [of his town] besotted."

Dr. Day, who has probably the largest experience of any man in the world in cases of drunkenness, states that "a large majority of the four thousand cases of inebriety I have treated commenced their course by the use of wine and beer."

Mr. Stocking, a native of Persia, who served in our late war, describes the scene as shameful "when a score or more of our brave boys would be marched after *pay day* between two files at guard-mounting, many of whom were intoxicated even to stupid unconsciousness on lager-beer—even Germans, for whom it is said to be harmless."

Rev. Mr. Thayer gives statistics in Massachusetts for the years 1867 and 1871. In the former, under prohibition, 5,553 arrests: in 1870, under free beer, 11,105—more than double the former. When restrictions were removed, 92,286¼ more barrels of beer were made in nine months than in the previous nine—an increase of 50 per cent.

Says Rev. Dr. Patterson: "The increase in the consumption of spirits in Prussia from 1850 to 1866 was from 31,250,000 gallons to over 50,000,000, or 60 per cent. in sixteen years, with a full supply of Rhine wine and lager-beer besides."

These "light drinks," as they are called, are not nutritious. They stupefy the mind, weaken the body, shorten life, increase rather than diminish the use of distilled liquors, because the use of one leads to the other, and are a most prolific source of drunkenness and crime. Shall we favor their manufacture, that the country may be aided? The brewers pay a tax of about $9,000,000 to the Government. Over $300,000,000 are spent for beer at retail over the bar, saying nothing of the grain wasted and the number of men engaged in the business, who might be employed in something useful. Do nine millions paid into the treasury offset three hundred millions taken largely from the poor families of the land, who pay for it through privation and sorrow? Shall we advocate their use or their sale? Shall we say to the distillers who have in Ohio about one-third as much capital as the brewers: "You shall be restricted as far as possible in this injurious business"; and say to the men who make 2,577,907 gallons of wine and 22,856,681 gallons of beer: "You have the sanction of the state, the press, and of all the good people to fill our workhouses and poorhouses, to increase our taxes, and lead our young men into drunkenness and crime"?

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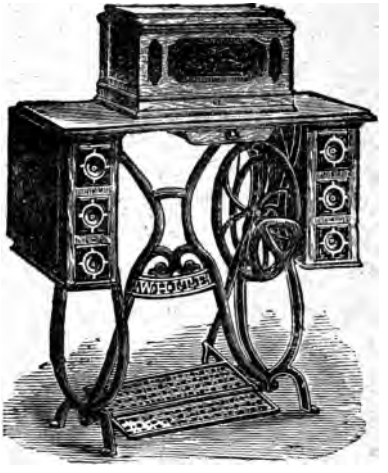

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SIMPLE SUGGESTIONS

CONCERNING

HEALTH

WHICH IS

WEALTH

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SIMPLE SUGGESTIONS

CONCERNING

HEALTH + WHICH + IS + WEALTH.

FROM "THE YOUTH'S HEALTH BOOK."

"Reason's whole pleasure, all the joys of sense, lie in three words:
Health, peace and competence."—POPE.

ORGANIZED BY THE BUSINESS MEN FOR THEIR EMPLOYEES, AND THE PEOPLE.

CLEVELAND, OHIO.
1882.

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SIMPLE SUGGESTIONS ON HEALTH.

FROM "THE YOUTH'S HEALTH BOOK."

INTRODUCTION.

Young as well as old people should know that most of the worst diseases which torment life, and frequently cause death, may be prevented by themselves. Children in the full glow of health think of illness, if they think of it at all, as a something, no doubt, very disagreeable to have, but about which they need not trouble themselves until it comes to trouble them. Having full confidence in their parents and the family medicine-chest, with the doctor and apothecary ready to aid in any emergency, future disease has little terror for the youthful imagination. With the indifference to all forebodings of ill habitual to youth, with its absorbing interest in present enjoyment—children are ordinarily reckless of any effect which their own conduct may have upon their health. They can, however, and ought to be made to, understand that it depends greatly upon themselves whether they are to be strong and hearty, or weak and miserable, or, in fact, to live or die. The preservation of their health should be inculcated upon them as a moral duty; for their usefulness in the world, and therefore the fulfillment of the great purpose of their creation, will depend upon it.

Those who are practiced in the training of children know well that they are not to be taught their duty by the mere statement, however impressively made and frequently repeated, of their moral obligations. The child requires to have pointed out to him what to do in each particular case, and to precept upon precept should be added demonstration upon demonstration, until he acquires not only the familiarity of knowledge, but the habit of action. This is the motive of this little book, in which it will be shown how the child should act in his daily conduct so as to enjoy health and prolong life. With this purpose in view, the directions will be given with minuteness of detail and simplicity of language; and though the technicalities of science be avoided, its principles shall be carefully regarded.

CHAPTER I.

Air.—Its Necessity to Life.—Fatal Consequences of Disregard of this Fact.—Bad Habit of Children.—Dangerous Amusements.—Quantity of Air Required.—Modes of Suffocation.—Examples.—Stifled in School-rooms.—The Black Hole of Calcutta.

The air which covers all this round earth, extending from its surface to a height above our heads of more than forty miles, is found almost everywhere in a fit state for immediate service. The first as the last effort of life is a gasp for air, and if it fails, death is the consequence. A mother, during the winter, starting on a sleigh-ride of some distance, and carrying her baby (a few months old) with her, wrapped it up so closely in shawls and furs, and hugged it so tightly, lest its tenderness should be touched by the biting frost that at the end of the journey, on opening the carefully guarded envelope, she found that it contained a—corpse!

It seems less surprising that thoughtless children should be so foolish or careless as often to deprive themselves of the quantity of air necessary to freedom of breathing, and do a serious injury to their health, and sometimes even endanger their lives.

They certainly injure their health by burying themselves in their beds and bed-coverings; and worse consequences, even death, would often result from this bad habit, were it not that in most cases a feeling of oppression forces the little simpletons, in spite of their own resolutions, to wriggle out of their self-made tombs, and gasp instinctively for fresh air. It may well be believed that this habit is frequently the cause of those headaches, nervous troubles, and diseases of the brain with which so many young people are afflicted.

Boys have been known, in their mischievous playfulness, to heap upon a not unwilling comrade such a quantity of hay, and to sit down upon it (all in the best humor and with the most innocent intentions in the world) so firmly as to stifle every cry and struggle of the victim, until finally he has been drawn out a livid corpse. Another mode of smothering is to hold his hands or put his handkerchief over the nose and mouth of a comrade and stop his breathing. His suffering, however, is unmistakably clear in the convulsive agitation of his whole body, and the livid face suffused with black blood.

It has been calculated that the proper quantity of air for a human being each day of twenty four hours would measure three hundred and sixty cubic feet. If he does not get all this, he suffers. The story is familiar of the poor girl in the ballad of "The Mistletoe Bough:"

> "Oh, sad was her fate! In sportive jest,
> She had hid from her lord in the old oak chest;
> It closed with a spring, and her bridal bloom
> Lay withering there in a living tomb."

Whether any one is thus shut up in a place where there is little or no air, or he is prevented from breathing it where it may be in the greatest abundance, as was Desdemona by the jealous and cruel Othello, who suffocated her, while in bed, by holding a pillow over her mouth and nostrils, the result is the same—death.

If children are deprived of sufficient air, as they often are in the school, bed, and other rooms to which they are confined, it is ordinarily the fault of the older folk who have charge of them. All boys and girls are advised to leave the school-room as soon as they have finished their lessons, and never remain in it to play, as they often do. If, however, the weather or peremptory order keeps them within doors, then let them by all means open the windows, or ventilators, if by chance there should be any such useful contrivances, that they may romp, and pull, and toss, and tumble at their will, without the danger of being stifled to death for want of air, which they consume faster and faster as they are more and more crowded together and active in exercise.

Let them take warning from the horrors of the Black Hole of Calcutta, a small prison-house, in which Surajah Dowlah, the cruel Indian ruler of Bengal, thrust, one night, one hundred and fifty English prisoners. In the morning, only twenty-three remained alive, the rest having been suffocated to death by the closeness and narrowness of the dungeon, in which there was no room to move and no air to breathe. This atrocity, which was committed more than one hundred years ago, and dreadfully avenged on the battle field af Plassey by Lord Clive, is still fresh in the memories of Englishmen, and it would be well for Americans to fix it in their minds as an illustration of the necessity of air and space for living beings.

CHAPTER II.

Composition of the Atmosphere.—Oxygen.—Carbonic Acid Gas.—Its Dangers and Benefits.—Medicinal Springs.—Carbonic Acid Gas in Nature.—The Dog's Grotto.—Carbonic Acid in Wells.—Dangers: how avoided —Effect of Plants on Carbonic Acid.

The principal parts of the air or atmosphere are the two gases termed "nitrogen" and "oxygen." The former of these is an important element of creation; but the latter (oxygen) is absolutely necessary to the breath of life, and is thus often called "vital air." It, however, unless mixed, as it is ordinarily in the atmosphere, with other gases and vapors, is too strong for continued breathing, and would, if not thus diluted, soon cause death.

Besides oxygen and nitrogen, pure air properly constituted for breathing, always contains a quantity, in varying proportions, of carbonic acid gas. This acts as a most deadly poison upon living beings when breathed alone. No air can be safely breathed by human beings which contains a larger proportion of carbonic acid than one volume in a thousand, Its deadly action when unmixed is shown by the effect of charcoal burning in a tightly closed room containing a living creature. The coal (called by chemists "carbon"), in burning, unites with the oxygen of the air, and forms carbonic acid gas. This process goes on until all the vital element of the atmosphere of the shut-up apartment, with the consumption of the fire and the breathing of the occupant, is exhausted, and nothing is left but the deadly gas. Life being impossible under such circumstances, death, of course, ensues. It may, indeed, be truly said that no one can remain safely for a long time, and certainly not

sleep, in any enclosure containing a fire or light, and into which the outward air cannot enter more or less freely.

Carbonic acid gas is positively wholesome, as when, for example, it is swallowed in combination or union with various drinks used as medcine or beverage. The sparkling liveliness of champagne, and of beer and cider, is due to the carbonic acid gas, which is produced in them in the course of fermentation, while the effervescence of soda-water comes from the same pumped into it. For this purpose, the carbonic acid gas is obtained by pouring oil of vitriol (sulphuric acid) upon powdered marble. The marble is known by chemists as carbonate of lime, which is composed of lime and carbonic acid. As soon as the vitriol touches the marble, it takes away the lime and sets free the carbonic acid gas, which rises like steam or vapor from boiling liquids, and being collected, is then passed into bottles, other vessels, or fountains containing water, which thus becomes that sparkling and agreeable beverage known as soda-water.

Carbonic acid gas is contained in a great many natural springs, and renders their waters not only more pleasant, but wholesome to drink. Saratoga and other medicinal waters of our country, as well as the Seltzer, Vichy, and a great many besides of foreign lands, contain a considerable portion of carbonic acid gas. The water which we ordinarily drink, moreover, must have some of this gas, or it will not be palatable.

Although nature supplies such an abundance of pure air, or what is fit for human beings to breathe, it also, in some comparatively few places, produces various vapors and gases which no one could take into his lungs without danger certainly, and probably fatal result, to life. Carbonic acid gas is one of the most common of these natural products, as is clear from its being so generally found in the medicinal springs abounding in many countries.

There was a spot in Italy, visited not many years ago by most travelers, called the *Grotto del Cane*, or Dog's Grotto, where it was customary for the guide or attendant to make a cruel show of the poisonous power of the carbonic acid gas which nature supplied there in much abundance and of great intensity. He had a dog which, on the payment of a small fee, he would let down by a rope to the bottom of a chasm or crevice and pull up again, now either quite dead, or with so little life as to appear so.

The carbonic acid gas, from its greater weight than the air of the atmasphere, will often collect and remain in crevices, caverns and deep holes of all kinds. It is apt to gather at the bottom of old wells; and if these are descended incautiously, as they often are by persons ignorant of the consequences, they will be certainly poisoned, and probably instantly killed. Even people of ordinary experience, without the least pretense to a knowledge of science, will not enter a well of any kind, for whatever purpose, without first testing its safety for descent by letting down into it a lighted candle. If this continues to burn, it is regarded as safe; if not, as exceedingly dangerous to descend.

By a beautiful provision, this gas, so poisonous to man and other animals, becomes a source of health and vigor to the vegetable world.

Trees, bushes and plants of all kind, so far from taking harm from carbonic acid, derive from it what is essential to their existence. They breathe in the gas, and, by means of a power within themselves, separate it into its two parts, keeping the carbon which forms the chief portion of their substance for their own use, and giving out the oxygen, so necessary to animal life. Thus vegetables purify the atmosphere. During the night plants give out carbonic acid; though small in quantity, it may be injurious to health.

CHAPTER III.

Carbonic Acid produced by Man.—Respiration.—Purpose of Inspiration.—Purpose of Expiration.—Pure Air the Antidote to Carbonic Acid.—Penetrating Power of Air.—Ventilators.—Summer and Winter Ventilation.—Atmospheric Impurities.—The Suffocation of the Elder Pliny.—Herculaneum and Pompeii.—Miasm.—Fever and Ague.—Poisons from the Household.—Poisons of Cities: Smoke; Dust; Gas.

The carbonic gas produced by man and other animals is the same as that found in the Dog's Grotto, in certain natural caves, crevices, holes, and at the bottom of wells, and exercises its harmful and deadly influence in exactly the same manner. One of the chief purposes, in fact, of breathing is to get rid of it.

Breathing consists of two processes, performed in man by means of the lungs and chest—one called inspiration, or breathing in; and the other, expiration, or breathing out. When we breathe in, or inspire, pure air (which we ought always to do if possible), we take in principally a supply of oxygen, which is essential to life. When, on the contrary, we breathe out, or expire, we throw off carbonic acid, a gas, as we now know, very injurious in certain proportions, and often fatal to life. The oxygen of the air that is breathed in is mostly used in the body for heating it, and purifying the blood, and this can only be done by taking the carbon it finds there and burning it, which, in fact, means no more than uniting with it and forming carbonic acid gas. This, being produced in the body—and of no use there—is breathed out. Thus it is that every living being may be truly said to be a source of poison. Many people would seem to be either ignorant of the necessity of pure air, or too indolent to get it, although they need do no more than open the window to a crack, or put the door ajar, in order to have all that may be required.

This pure air, which acts so beneficent a part—giving us life, on the one hand, and warding off death, on the other—is treated as if it were the greatest enemy of the human race. People fasten down their windows and shut close their doors against it, and seem determined that it shall not enter their houses. Such is the penetrating power of air, that it will pass through walls of not only brick and mortar, but even of stone; and there are, moreover, always providential cracks, crevices and holes of some kind, through which it will gain a more or less free entrance. No building which is to be occupied by living beings ought to be regarded as complete without ventilators, as those contrivances for letting in the pure air from without, and letting out the foul air from within, are called. Even if these are not provided, no one need, if he

has a window or a door in his house, be deprived of all the air required. Many more are injured by too little rather than too much air.

If there is an open fireplace, with a free vent through a broad chimney, and a fire burning, there may be no necessity for opening the door or windows, for this itself is a very good ventilator. In winter, when the house is kept well-heated, there is always a freer ventilation than in summer; for in the former case is generally a draught from the colder atmosphere without to the warmer within, while in the latter it is reversed, if there should be any; but there is generally a complete stagnation of air.

In volcanic regions, in mines and other places, various gases and vapors are set free. These often prove injurious to the health and destructive of the life of man. During the great eruption of Mount Vesuvius which destroyed Herculaneum and Pompeii, nearly eighteen hundred years ago, more lives were destroyed by the poisonous gases which issued from the burning mountain than by the floods of hot lava and the volcanic showers, which poured down such enormous quantities of ashes and masses of pumice-stone as to bury those beautiful cities so deeply that no trace of their ruins was observed for 1,000 years.

The younger Pliny, as he is called, barely escaping, with his mother, from the doomed cities, lived to record the death, on that occasion, of his less fortunate uncle, the elder Pliny, a famous Roman writer on natural history, and a distinguished naval officer. The nephew, in a charming letter, written when he was only eighteen years old, thus describes the fatal occurrence:

"On the 24th of August, A.D. 79, shortly after twelve o'clock, an immense cloud was observed to rise over the mountain, in the form of a pine-tree—partly of a white, partly of a dark color, which came from the ashes it carried with it. The elder Pliny went with several galleys to the assistance of those whose villas were situated at the foot of Mount Vesuvius. As he approached the shore, the cinders, which grew thicker and hotter, fell into the ships, together with pieces of pumice and some larger stones. At length the shallowness of the water prevented him from landing, as the sea had retreated from the shore. A strong northwest wind had sprung up, which drove him to Stabiæ, about three miles distant from Pompeii. The falling of ashes and pumice continued the whole night, and grew more and more violent. Several large streams of lava broke forth from the mountain, and Pliny was obliged to resolve upon leaving the house in Stabiæ, to avoid being overwhelmed by the showers of stones and ashes.

"They went out, having large pillows tied upon their heads, as a protection in the open air. It was on the 25th of August, in the morning, and the eruption continued to increase, and at last reached such a height that a most fearful explosion took place, during which the stream of lava was emitted which entirely overwhelmed Herculaneum. This explosion drove the followers of Pliny to flight; but as he was stout and short of breath, he instantly fell down dead, being suffocated by some gross and noxious vapor."

The total number of persons killed by the destruction of Herculaneum and Pompeii is estimated at 1,500; of these the greater part were suffocated, as they sought refuge, in the interior of their houses.

Many thousands lose their lives every year in the English mines by being suffocated or blown up with choke-damp, or other explosive and poisonous gases.

"Miasm," or "malaria," which signifies bad air, arises from damp places, ponds, swamps, streams and rivers, and is supposed to be produced by the decay of vegetable matter of every kind when acted upon by heat and moisture. It prevails mostly in newly occupied regions which have not yet been thoroughly cultivated. It disappears generally in the United States with the increase of the number of inhabitants and the full development of the habits of civilization. The clearing of the land and its drainage seem to be the surest means of preventing the generation of miasm. It still prevails, however, in some of the oldest countries, as in the Pontine marshes of Italy, in the neighborhood of Rome, and which so infects its atmosphere that a residence at certain periods of the year in that famous city is excessively dangerous to most strangers.

The most familiar result of breathing this miasm is the fever and ague, to which habit has so familiarized many of our outlying fellow-citizens, that they make quite light of it, and when condoled with on the score of their sufferings from the disease, and the cadaverous looks which it gives, they will answer as firmly as their bloodless and trembling lips will allow, "It is only the shakes." The fever and ague, however, though its fits are possibly not difficult, with long practice, to endure, is a serious disease, inasmuch as frequent attacks will greatly weaken the strongest constitution, and often do permanent injury to some of the vital organs of the body.

Where miasm prevails, the best means of avoiding its ill effects is to keep up good fires in the house during the spring and fall, or autumn—for these are the seasons when it abounds—even though the cold is not sufficiently great to seem to require them. It is prudent, moreover, to keep away, particularly in the early morning and during every hour of the night, from all rivers, creeks, ponds and marshes, which generate the miasmatic poison. Old and experienced people are generally wise enough to do so, but young folk are very apt to neglect this and every other precaution against danger to health. Children should hurry away from the river, stream or pond, in which they delight to sport, and not linger about their banks or borders; and, as soon as the sun sets, they should try to get under the snug cover and within the comfortable warmth of home before the miasm begins to infect the atmosphere. This will be particularly necessary if they happen to have a wet jacket or wet boots or shoes (which they ordinarily do, if there be any possible means of getting them), since the least chill from cold and moisture will make them more liable to catch the fever and ague, or any other disease caused by malaria.

The air we breathe is more or less poisoned by the daily work necessary in every household, shop and factory. There is not a fire or light burning which does not send out a poisonous vapor or gas. In England a law forces every proprietor of a large furnace or manufactory to use a contrivance for the consumption of the smoke that may be produced in the course of the operations carried on in those establishments. Such a

law should be made in every country. and it would be wise, if it were practicable, to extend it to the smoke raised in private houses, for the atmosphere of whole cities is now infected by its poisonous qualities.

Most cities, and our cities especially, are filled with producers of poisons which we take in with every breath of air. There is not only the smoke which comes out of every chimney of dwelling and factory, but there are also the reeking vapors rising from slaughter-houses, the offal and corruption which are found more or less in every street. and, besides, the polluting breath of the millions of living and of the thousands sick and dying, to make the great city a huge generator of poison.

The very dust which rises from each step taken makes the air less fit to breathe. Persons whose occupations are of such a kind as to expose them daily to various kinds of dust are apt to suffer from a special ailment which soon destroys their lives. Street-sweepers, grinders of glass and metal, coal-heavers and such like, are often affected with a disease of the lungs produced by particles of the dust to which their occupation exposes them taken in with the air they have breathed. These inflame the delicate breathing apparatus, and produce all the dire effects of the fatal consumption. On examining the lungs after death, they are generally seen to be mere dust-heaps, with all their natural substance ulcerated away, to make room for the fatal mass of stuff which has taken its place.

It may be well to remind all people, and especially the young, that the gas used for lighting purposes acts as a deadly poison if breathed. Its odor, fortunately, is very strong, and readily noticed, so that the least escape of gas will attract attention of those, at least, who may happen to be awake. As soon as the peculiar smell is observed, the safest proceeding is to open the windows at once, and let in as much air, which is the best antidote to the poison, as possible. Beware, however, of taking a lighted candle, match, or anything, in fact, which is burning, into an enclosed place where gas is suspected to have escaped, or there will be an explosion, still more certain and quick to destroy life.

CHAPTER IV.

Corruption of Air by Disease.—Contagion and Infection.—Epidemics.—Precautions.—Duty to the Sick.—Animal Heat.—Its Mode of Production.—How Regulated.—Necessity of Adapting Habits of Life to Climate and Season.

Human as well as most other animals, when diseased, corrupt the air con stantly by certain emanations peculiar to their unwholesome condition.

Certain precautions may be taken by those who attend the sick to prevent what poison they produce from injuring the healthy. Plenty of pure air must be allowed to enter the sick-room, the greatest cleanliness kept, all which passes from the patient disinfected, as it is called—that is, deprived of its poisonous quality by certain substances known as disinfectants—and carefully removed from all possible chance of contact in any way with living creatures, and no person whose attendance is not absolutely necessary admitted into the same apartment with the diseased person,

Nothing so disposes a healthy person to catch a contagious or infectious disease as fright. From the East, whence came "The Arabian Nights" and many other pretty stories, in which useful truths are so invitingly arrayed in the attractive dress of fiction, comes this fable: A stranger on the road, accosting the Plague coming out of Bagdad, said, pointing to the city: "You have been doing great havoc there." "Not so great," replied the Plague; "I only killed one-third of those who died; the other two-thirds killed themselves with fright."

It ought to be remembered that the best protection against its evil consequences is a courageous spirit. He must not be weakened by the cravings of hunger and want of food. It may be well, too, to guard his mouth and nostrils with the breathing apparatus commended by an eminent philosopher (Tyndall) of London, who, holding that contagious and infectious diseases are conveyed from the ill to the well by means of germs, or seeds, floating in the air, supposes that they may be thus stopped on their course to the mouth and lungs, and prevented from poisoning the body. The handkerchief, or some flocks of cotton or wool, will answer the purpose if the more artificial contrivance is not at hand.

When such diseases as have been spoken of, and others like the cholera and plague, fall upon a great number of people at the same time, they are called epidemic, from two Greek words, meaning *upon* and *people*. It is during the prevalence of an epidemic that it especially behooves every one to be careful of his general health, to reform such habits as he may have which weaken force and predispose to disease, and avoid excess or imprudence of any kind, such as extraordinary indulgence in eating or drinking, unusual strains of the strength likely to cause much fatigue, and exposure to rough weather, and sudden changes of heat and cold.

Hidden, however, from human knowledge as is the cause of an epidemic, its worst effects are within the power of human wisdom to ward off, to a great extent. By observing strictly the laws of health, which it is the purpose of this little book to set forth, the worst diseases, come as they may, can be boldly defied.

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Such exceptions, however, are so rare, that those persons who have once had a contagious or infectious disease may presume that they will not get it a second time, and can accordingly, without reasonable fear, attend upon their friends, or other people calling for their good services, who are afflicted with it.

Most young, and probably old people have no idea of any heat except that which comes from the sun, fires of all kinds, and, as they suppose, from warm coverings, such as the furs and feathers of animals, and the clothes worn by human beings during the day, and the bed and bedding in which they lie at night. Human beings, and in fact all living creatures, make themselves the heat which is most necessary to them. They are all provided with furnaces, as they may be called, within their bodies, which continue to burn as long as they breathe, and only go out with life. So well regulated, moreover, is this internal fire, that to whatever degree of cold the external parts of his body may be exposed, the living being, if provided with the ordinary essentials to healthful life, continues to get within himself all the heat he requires. So that whether his skin is scorched by the blazing sun of the tropics, or shrinks from the withering touch of the arctic frost, the internal furnace keeps the interior of the body at nearly the same uniform warmth.

The internal warmth of the living body, or animal heat as it is called, is produced and regulated to a considerable extent by the process of breathing.

The fuel which supplies the human furnace is obtained chiefly from the food, and is essentially the same substance as is burned in ordinary fires. It is carbon, or charcoal, and comes from the fatty portions of the meat, vegetables, and other articles of food eaten, and the alcoholic fluids of various kinds drunk by man. The animal furnace is supposed to be regulated and adapted to varying climates by means of the action of the body, the air, and diet. In order to keep a uniform temperature, whatever may be the degree of external warmth or cold, it is obviously necessary to vary the quantity of heat produced. In cold climates and cold weather, a greater supply, and in hot climates and hot weather a less will be required. In the former, accordingly, a much greater stock of carbon, or charcoal, should be taken in; and as this is found in the largest quantity in fatty food, such would appear to be the most appropriate for cold regions and seasons. This seems to be confirmed by the greater inclination for such food under these circumstances, and the apparently instinctive fondness of the Esquimaux and other inhabitants of arctic countries for whale-oil, seal-blubber, tallow-candles, and soap-fat.

To consume the abundant carbon, or fuel, thus supplied—for fat of all kinds, it must be remembered, is chiefly made up of this charcoal—there must be, in order to keep agoing the brisk internal fire required for the large quantity of animal heat necessary to living beings in cold seasons, a great abundance of oxygen. This nature takes care to furnish, by means of the more condensed or closer packed atmosphere which is found during winter and in arctic regions. A greater quantity of the oxygen, without which the fires in the inside of the body, as in the ordinary ones, will not burn at all, is thus supplied. Cold, moreover, promotes activity, and especially impels to brisk exercise of the body, and consequent greater quickness of breathing. The respiration thus not only becomes more rapid, but at each inspiration the air taken into the lungs contains a larger proportion of oxygen.

In summer and in warm regions, the opposite occurs. The atmosphere is rarer, or less closely packed, and contains in the same place less oxygen. so that in each inspiration there is a smaller quantity of it breathed into the lungs. The disinclination, moreover, to activity, and the general habit of indolenee, which are common to people living in hot climates, and even to the inhabitants of temperate latitudes during the season of summer, cause them to breathe less frequently, and consequently tend, together with the rarer otmosphere, to diminish the supply of oxygen.

The fuel, too, is ordinarily greatly decreased by the kind of food generally preferred and eaten by people during the warm weather, which prevails in the summer of temperate, and in all seasons of tropical climates. In fact, the inhabitants of many hot climates live almost exclusively on rice, fruits, and other prodnets of a vegetable kind.

Many an Englishman, bred amidst the chilly fogs of London, to beef, pork, and porter. goes to live in India, and persists, while weltering in the sweat of its prevailing heat, in gorging himself with his habitual abundance of solid food and profusion of strong drink. He at the same time is forced by the warmth of the climate to a necessary repose and indolence, and to breathe an atmosphere poorly supplied with oxygen. The excess of carbon taken into his body not being consumed for want of enough oxygen for the purpose, and therefore not escaping in the usual form of carbonic acid gas from the lungs, is retained within him, and cast, like so much waste matter, into the most convenient receptacle found in his interior. This is ordinarily the liver, which thus becomes a garbage-box, as it were, and a very serious nuisance it proves to be to the unhappy possessor; for the waste carbon which fills it is changed into an unwholesome greasy matter, which results in the production of a disease known to physicians as the fatty liver of India, which is so fatal to the hard-eating and deep-drinking Englishmen who have lived in that hot Eastern country.

CHAPTER V.

Evaporation.—Conduction.—Radiation.—How to retain Animal Heat.—Object of Clothing.—Good and Bad Conductors.—Winter Clothing.—Proper Clothing in Moist Weather.

When an old sailor wants to know which way the wind blows, he will first put his finger into his mouth, and then hold it up in the air. Wherever it feels coldest, as it does on one side or the other immediately, he concludes that is the direction of the wind. When asked for an explanation, he will probably, with a great expression of contempt for the landsman who has made the inquiry, gruffly answer, "Why, of course it is the breeze; don't you see, you lubber?" He is indeed right; it is the breeze; but the question is, how does it act? The change from a liquid to a vapor is greatly favored by the abundance and rapid movement of the air; so the moisture of that part of the finger which is exposed most directly to the wind, and consequently receives most air, in the quickest time, will be the first to evaporate and feel the cold produced, in consequence. Evaporation, under favorable circumstances,

will produce cold enough to form ice. Belzoni, the famous traveler, conscious of this fact, undertook, with the utmost confidence, to show the sultan that he could turn water into a solid, notwithstanding he was threatened, if he failed, with the loss of his head. He, of course, succeeded; making use of the now familiar means of an air-pump, in the receiver of which a little water being placed, and a vacuum produced, a film of ice soon made its appearance, much to the surprise of the sultan. It is usual for the people of warm climates to cool their drinking-water by keeping it in porous earthen jars, or wrapping the vessels which contain it, in moistened cloths, both of which, especially when exposed to a draught of air, favor evaporation, and consequently produce a very considerable cold.

By *conduction* we are to understand that process by which heat passes through bodies, living or otherwise; and it is common to call such bodies "good conductors" and bad conductors," according to the ease and quickness with which they allow of its passage. Wooden handles are fixed to the iron poker with which the fire is stirred; a pad of cloth is put on the holder of a flat-iron in ironing clothes; no one attempts to take a boiling pot from the fire with the hand until it is guarded with a cloth of some kind; and the parlor tea-urn would burn the delicate dame who serves it if there were not a bit of ebony, ivory, or some other bad conductor, let in between the handle and the body of the vessel which contains the hissing-hot fluid, to prevent its heat from passing to the fingers that grasp it.

Radiation is the process by which heat passes from a body apparently in *rudii*, or rays. The rude pictures of the sun seen upon sign-boards, where a round flaming head is represented to be darting spikes of fire on all sides, will supply further illustrations of what is meant by the term "radiation." It is by waves, however, that, as we are told by the philosophers, heat passes from body to body; thus the heat of the real sun reaches us; and it is also in this way that we receive the warmth of the stoves, grates and other contrivances for heating us. The whole earth, and everything upon it, is ceaselessly radiating heat, and thus there is a constant tendency in nature to produce by this means in all objects, living or otherwise, an equality of temperature; but the effort is checked by other processes, such as the evaporation and conduction, of which we have spoken. The greater coldness of the night is due to the larger degree of radiation from the earth of heat, in proportion to what it then receives from the sun than during the day. The inhabitants of India make a useful application of this fact. They expose shallow pans filled with water to the night air, so arranged as to favor radiation, and the cold produced is generally sufficient to cover them before morning with films of ice.

A certain degree of heat in the interior of our bodies is absolutely essential to health and life. This is generally estimated to be about 100° Fahrenheit, which is ordinarily marked upon the thermometers used in the United States as "blood-heat." In healthy human beings this should vary but little, whatever the degree of external heat or cold to which they may be exposed; and a thermometer placed in the armpit, or beneath the tongue, of a person during the coldest day of winter or the

hottest of summer ought generally to rise to this point of 100° Fahrenheit. To prevent the animal heat made within the body from escaping too quickly, and to keep it up to the degree essential to its healthy condition, certain familiar means are used. The roof that covers, the walls that enclose us, the clothes we wear, and the fires we light, are mainly for this purpose. All of these act thus beneficially, directly or indirectly, through evaporation, conduction and radiation; some chiefly by one, and others by two or three together of these processes.

The animal body, like all other bodies, has a constant tendency to lose its heat by evaporation, conduction and radiation; and if the purpose is to keep it, as of course it is, during cold weather at least, the action of these must be checked. The only purpose of dress, apart from satisfying decency and taste, is, in cold weather, to prevent the escape of the heat of our bodies. Few persons need be told that feathers, fur and wool are warmer than bare skins, cotton and linen. Furs and feathers, though the best for the purpose, being the worst conductors, are too costly for common use, and so articles made of wool are generally used. As the skin of some persons is particularly sensible to the least roughness, the smooth silk, cotton, and even linen, are often preferred to the harsher woolen materials. Of these, linen is a very good conductor, while cotton and silk are tolerably bad conductors, and are therefore preferable to it for winter wear.

The air is a very bad conductor, and the more held by any article of of clothing, the less will be its power to conduct away heat. The looser, therefore, the texture of a material, the better will it be adapted for winter wear, since the greater quantity of air which the spaces between its coarsely woven threads allow it to receive will proportionately lessen its conducting power, whatever may be that of the substance of which it is composed. Cloth of wool or cotton, though these materials are naturally bad conductors, may be made a good conductor by close weaving or fineness of texture. It is probably on this account that fashion has been forced to give up the fine broadcloths, once deemed indispensable for the daily wear of the finer gentleman. He now generally keeps the superfine stuffs for the warm atmosphere of the dining-room or dancing-saloon; though, in compliance with ridiculous tradition, he may yet be seen in the coldest weather freezing in the scant swallowtail coat and thin trousers of black kerseymere in the sepulchral church at a wedding, or at the edge of an open grave at a funeral.

The make of a dress, as well as the texture of its material, will greatly affect its conducting power. A tightly fitting garment is much colder than a loosely fitting one; not only, however, because it thus becomes a better conductor by excluding the air, but also in consequence of its pressure upon the body, which prevents the free circulation of the blood, so essential to the fire-making process going on within us. The loose sack-like suit now generally worn by most of the male sex, boys as well as men, is a sensible concession of fashion to utility, which could hardly be expected from a guide which so often leads the world into absurdity. Women, however, have nothing to thank fashion for on this score, but are still, in accordance with its peremptory orders, squeezed into the narrow bodice, and tortured with the ever-tightening corset.

That their noses are nipped by each touch of cold air, and whatever is movable about them should quiver, even while fixed to the fireside, at the faintest breath, is not surprising. No good fire can be made or kept agoing in frames where there are so many obstructions to a free circulation; and warmth, of course, is no more possible than in a stove without a draught. To the torture at all times of the pressure of tight boots, shoes and gloves, with which the fools of fashion inflict themselves, will be added in winter the suffering from cold hands and feet. The power of holding air will be increased, not only by the looseness of fit of the dress, but by the greater number of its layers. In the winter, accordingly, a person does well to pile coat upon coat, and roll wrapper around and around, if he is to be exposed to severe cold, without the opportunity of active bodily exercise.

Moisture increases the conducting power of all clothing, since it drives out the air in the spaces between its threads or fibres, and thus takes the place of a worse conductor than itself. Wool absorbs moisture with less rapidity than linen, and its conducting power is therefore not so much increased by it. Whatever may be the season of the year and the temperature, a woolen dress, when exposure to wet cannot be avoided, is the safest to wear, for the heat of the body is thus less likely to be suddenly checked—an occurrence always dangerous to health, and frequently fatal to life.

CHAPTER VI.

Natural Moisture.—Overcoats.—Adaptation of Clothing to Weather.—The Duke of Wellington and his Wardrobe.—Fires and their Dangers.—Hardening.—Foolish Dread of Cold Air.—Colds: how caught and avoided.—Imprudence of Boys and Girls.—Petting Dr. Solander in the Arctic Region.—Chilblains and Frost-bites.

There is a natural moisture upon the surface of the body of every healthy person, which, like all other moisture, tends to evaporate and produce cold. If the dress, however, should by any chance become wet, its own moisture will continue to evaporate until it is dry, and necessarily produce, in the meantime, a coldness which the person who may wear it is sure to feel. It is thus that a wet jacket or any other article of clothing becomes soon uncomfortable, and, even in the warmest weather, is apt to produce a chill exceedingly dangerous to health. Young people, therefore, are earnestly urged to give more heed than they usually do to the advice of their parents and others to make haste to change their clothes, whether only damp or sooking wet, as soon as they cease all active exercise, and are about to remain at rest. It is necessary, in case of weakness from illness or a feeble constitution, to guard against all sudden changes of temperature, and, therefore, it will be well to warm each garment by the fire before it is put on, that, on being brought close to the body, it may not take away more heat than it gives.

The old Duke of Wellington is said to have had as many varieties of cloaks and overcoats as there are changes of weather. As the climate of England, where he lived, is very variable, the duke's wardrobe must have been as full of odd garments as the shop of a Chatham Street dealer

in old clothes. His Grace very sensibly resolved to adapt his dress not only to the change of season, but to the temperature varying from day to day. Accordingly, every morning, before setting out on his daily ride or walk, his well-known aquiline nose might be seen for a moment at the window just opened to a crack, testing the sensation of the weather, and taking an observation of the thermometer hanging there. He, having thus noted the temperature, would bid his valet bring him the corresponding covering. Now it would be the freezing-point fur cloak, now the forty-degree cloth coat, again the temperate light military cape, and so on through all the range of the thermometer and the wardrobe.

Every one is not a duke with an infinite clothing department at his command. Each person, however, who has two or three suits at his service would do well to adapt the use of them to the variations of the weather. The rule for young people, in the matter of the overcoat, is to put it on when they first go out of a warm room into the cold air of a severe winter's day. They may lay it aside on beginning active play, but they should resume it at once on ceasing. The habit of remaining in-doors during cold weather and "hugging the fire," as it is called, is a dangerous one. The heat obtained in this way only warms the surface of the body, and does not supply what is necessary not only for comfort, but health, and which can only be obtained through active exercise and free breathing in the open air.

"He who does not dress warmly enough must be either a fool or a beggar," is a shrewd Scotch proverb. If a person has the means to clothe himself properly, and does not do so, he is supposed to be the former; and if he has not, he cannot, and therefore may be called, in one sense, the latter. Children are very apt to laugh each other into such absurdities of conduct. With the false idea, started probably by some lad who has no warm coat to his back, and, like the fox without a tail, is anxious that all his fellows should be in the same predicament, that it is not heroic to enjoy the comforts of substantial clothing, whole schoolfuls of boys will bare themselves to every wind that blows.

The surface of the body cannot, as is often supposed, be hardened by continued exposure to cold or intemperate weather of any kind. The skin, when in a wholesome condition, is moist and soft, and, being constantly renewed, retains to a great extent its freshness and delicacy throughout life. Many people have an unnecessary dread of the cold air, which seldom, if ever, unless its temperature is so excessive as to produce frost-bites and other worse effects, does any injury to a healthy person. It is common to attribute to it coughs, catarrhs and other affections of the breathing apparatus; but these are not caused directly by its means. A sudden transition from a high to a low temperature, if the body should not be properly clothed, is certainly harmful. When, however, there is exhaustion, as is apt to accompany the heat which follows hard work or active exercise of any kind, it is not doubted that a sudden exposure to cold is full of risk to health.

The rule of safety is to guard against the changes of temperature. Especial care should be taken to protect the person with an abundance of warm covering at the very moment when there is a cessation of heat-

ing exercise of any kind. It is just then, however, unfortunately, that, with the feeling of excessive warmth, there is the least inclination to burden the body with heavy clothing. Boys, and girls too, will thus often, after active play, cast off any easily shifted bit of clothing, and throw themselves, heated and exhausted, on the cold, moist ground. Nothing can be more dangerous. Instead of stripping at this time, they should put on additional covering, and avoid lying down, especially on such a couch as is offered by the bare, damp earth.

With the notion, apparently, that there is something poisonous in the cold air, an immense deal of care is taken that not healthy only, but sick persons shall not be exposed to it. This is particularly so in regard to any one who may be affected with what is generally termed a "cold." The doctor, who, on first entering the bedchamber of a sick person, closed tightly against every breath of outward air, thrust his cane through the panes of the windows, much to the astonishment and horror of a stifling crowd of visitors, feared only the corruption of the atmosphere within, and boldly invited the pure atmosphere from without, with all its coldness. The quick recovery of the patient justified the doctor's audacity.

The usual "petting," as it is called, of a common cold, where there may be merely a running from the nose or a slight cough, without any extraordinary heat of the skin, or any other mark of fever, is by no means the best manner of getting rid of it. It will be found that moderate exercise, in the open air, with a prudent adaptation of the clothing to the weather and season, is the best treatment. Monsieur Dupre, a great French singer, who had every motive for protecting himself against a cold, for each attack was a loss to him of thousands of dollars, declared, as the result of his experience, that it was better not to use too great or many precautions. He avowed that the best protection of all was to fortify the body by exercise in the open air during all seasons and weather.

There is a tendency on the part of one who is subjected to, and begins to feel, the influence of a very low temperature to lie down and sleep. Dr. Solander, who was the surgeon and naturalist of an early arctic expedition, reports that this somnolency was so irresistible in his case, that although he had impressed upon his companions the necessity of not giving way, or letting others give way, to it—for sleep, he knew, under such circumstances is certain death—he was the very first person to yield. Fortunately, his comrades had heeded his lesson, and as soon as the doctor fell back and threw himself upon the ice to repose, they aroused him, and continued to keep him awake, by all the means in their power, notwithstanding his most urgent solicitations to be left alone to sleep and to—die. They succeeded, in spite of his resistance, in disturbing his repeated slumbers, until he finally became wide awake to the imminent danger he had run, and lived to thank his companions for their faithful obedience to his instructions

Frost-bites, of which the most familiar form is the common chilblain, are best avoided by brisk exercise in the open air, and keeping away habitually from hot stoves and fires on entering the house after exposure to severe cold. Rubbing the frost-bitten part with snow or washing it

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Evaporation.—Conduction.—Radiation.—How to retain Animal Heat.—Object of Clothing.—Good and Bad Conductors.—Winter Clothing.—Proper Clothing in Moist Weather.

When an old sailor wants to know which way the wind blows, he will first put his finger into his mouth, and then hold it up in the air. Wherever it feels coldest, as it does on one side or the other immediately, he concludes that is the direction of the wind. When asked for an explanation, he will probably, with a great expression of contempt for the landsman who has made the inquiry, gruffly answer, "Why, of course it is the breeze; don't you see, you lubber?" He is indeed right; it is the breeze; but the question is, how does it act? The change from a liquid to a vapor is greatly favored by the abundance and rapid movement of the air; so the moisture of that part of the finger which is exposed most directly to the wind, and consequently receives most air, in the quickest time, will be the first to evaporate and feel the cold produced, in consequence. Evaporation, under favorable circumstances,

will produce cold enough to form ice. Belzoni, the famous traveler, conscious of this fact, undertook, with the utmost confidence, to show the sultan that he could turn water into a solid, notwithstanding he was threatened, if he failed, with the loss of his head. He, of course, succeeded; making use of the now familiar means of an air-pump, in the receiver of which a little water being placed, and a vacuum produced, a film of ice soon made its appearance, much to the surprise of the sultan. It is usual for the people of warm climates to cool their drinking-water by keeping it in porous earthen jars, or wrapping the vessels which contain it, in moistened cloths, both of which, especially when exposed to a draught of air, favor evaporation, and consequently produce a very considerable cold.

By *conduction* we are to understand that process by which heat passes through bodies, living or otherwise; and it is common to call such bodies "good conductors" and bad conductors," according to the ease and quickness with which they allow of its passage. Wooden handles are fixed to the iron poker with which the fire is stirred; a pad of cloth is put on the holder of a flat-iron in ironing clothes; no one attempts to take a boiling pot from the fire with the hand until it is guarded with a cloth of some kind; and the parlor tea-urn would burn the delicate dame who serves it if there were not a bit of ebony, ivory, or some other bad conductor, let in between the handle and the body of the vessel which contains the hissing-hot fluid, to prevent its heat from passing to the fingers that grasp it.

Radiation is the process by which heat passes from a body apparently in *radii*, or rays. The rude pictures of the sun seen upon sign-boards, where a round flaming head is represented to be darting spikes of fire on all sides, will supply further illustrations of what is meant by the term "radiation." It is by waves, however, that, as we are told by the philosophers, heat passes from body to body; thus the heat of the real sun reaches us; and it is also in this way that we receive the warmth of the stoves, grates and other contrivances for heating us. The whole earth, and everything upon it, is ceaselessly radiating heat, and thus there is a constant tendency in nature to produce by this means in all objects, living or otherwise, an equality of temperature; but the effort is checked by other processes, such as the evaporation and conduction, of which we have spoken. The greater coldness of the night is due to the larger degree of radiation from the earth of heat, in proportion to what it then receives from the sun than during the day. The inhabitants of India make a useful application of this fact. They expose shallow pans filled with water to the night air, so arranged as to favor radiation, and the cold produced is generally sufficient to cover them before morning with films of ice.

A certain degree of heat in the interior of our bodies is absolutely essential to health and life. This is generally estimated to be about 100° Fahrenheit, which is ordinarily marked upon the thermometers used in the United States as "blood-heat." In healthy human beings this should vary but little, whatever the degree of external heat or cold to which they may be exposed; and a thermometer placed in the armpit, or beneath the tongue, of a person during the coldest day of winter or the

hottest of summer ought generally to rise to this point of 100° Fahrenheit. To prevent the animal heat made within the body from escaping too quickly, and to keep it up to the degree essential to its healthy condition, certain familiar means are used. The roof that covers, the walls that enclose us, the clothes we wear, and the fires we light, are mainly for this purpose. All of these act thus beneficially, directly or indirectly, through evaporation, conduction and radiation; some chiefly by one, and others by two or three together of these processes.

The animal body, like all other bodies, has a constant tendency to lose its heat by evaporation, conduction and radiation; and if the purpose is to keep it, as of course it is, during cold weather at least, the action of these must be checked. The only purpose of dress, apart from satisfying decency and taste, is, in cold weather, to prevent the escape of the heat of our bodies. Few persons need be told that feathers, fur and wool are warmer than bare skins, cotton and linen. Furs and feathers, though the best for the purpose, being the worst conductors, are too costly for common use, and so articles made of wool are generally used. As the skin of some persons is particularly sensible to the least roughness, the smooth silk, cotton, and even linen, are often preferred to the harsher woolen materials. Of these, linen is a very good conductor, while cotton and silk are tolerably bad conductors, and are therefore preferable to it for winter wear.

The air is a very bad conductor, and the more held by any article of of clothing, the less will be its power to conduct away heat. The looser, therefore, the texture of a material, the better will it be adapted for winter wear, since the greater quantity of air which the spaces between its coarsely woven threads allow it to receive will proportionately lessen its conducting power, whatever may be that of the substance of which it is composed. Cloth of wool or cotton, though these materials are naturally bad conductors, may be made a good conductor by close weaving or fineness of texture. It is probably on this account that fashion has been forced to give up the fine broadcloths, once deemed indispensable for the daily wear of the finer gentleman. He now generally keeps the superfine stuffs for the warm atmosphere of the dining-room or dancing-saloon; though, in compliance with ridiculous tradition, he may yet be seen in the coldest weather freezing in the scant swallowtail coat and thin trousers of black kerseymere in the sepulchral church at a wedding, or at the edge of an open grave at a funeral.

The make of a dress, as well as the texture of its material, will greatly affect its conducting power. A tightly fitting garment is much colder than a loosely fitting one; not only, however, because it thus becomes a better conductor by excluding the air, but also in consequence of its pressure upon the body, which prevents the free circulation of the blood, so essential to the fire-making process going on within us. The loose sack-like suit now generally worn by most of the male sex, boys as well as men, is a sensible concession of fashion to utility, which could hardly be expected from a guide which so often leads the world into absurdity. Women, however, have nothing to thank fashion for on this score, but are still, in accordance with its peremptory orders, squeezed into the narrow bodice, and tortured with the ever-tightening corset.

That their noses are nipped by each touch of cold air, and whatever is movable about them should quiver, even while fixed to the fireside, at the faintest breath, is not surprising. No good fire can be made or kept agoing in frames where there are so many obstructions to a free circulation; and warmth, of course, is no more possible than in a stove without a draught. To the torture at all times of the pressure of tight boots, shoes and gloves, with which the fools of fashion inflict themselves, will be added in winter the suffering from cold hands and feet. The power of holding air will be increased, not only by the looseness of fit of the dress, but by the greater number of its layers. In the winter, accordingly, a person does well to pile coat upon coat, and roll wrapper around and around, if he is to be exposed to severe cold, without the opportunity of active bodily exercise.

Moisture increases the conducting power of all clothing, since it drives out the air in the spaces between its threads or fibres, and thus takes the place of a worse conductor than itself. Wool absorbs moisture with less rapidity than linen, and its conducting power is therefore not so much increased by it. Whatever may be the season of the year and the temperature, a woolen dress, when exposure to wet cannot be avoided, is the safest to wear, for the heat of the body is thus less likely to be suddenly checked—an occurrence always dangerous to health, and frequently fatal to life.

CHAPTER VI.

Natural Moisture.—Overcoats.—Adaptation of Clothing to Weather.—The Duke of Wellington and his Wardrobe.—Fires and their Dangers.—Hardening.—Foolish Dread of Cold Air.—Colds: how caught and avoided.—Imprudence of Boys and Girls.—Petting Dr. Solander in the Arctic Region.—Chilblains and Frost-bites.

There is a natural moisture upon the surface of the body of every healthy person, which, like all other moisture, tends to evaporate and produce cold. If the dress, however, should by any chance become wet, its own moisture will continue to evaporate until it is dry, and necessarily produce, in the meantime, a coldness which the person who may wear it is sure to feel. It is thus that a wet jacket or any other article of clothing becomes soon uncomfortable, and, even in the warmest weather, is apt to produce a chill exceedingly dangerous to health. Young people, therefore, are earnestly urged to give more heed than they usually do to the advice of their parents and others to make haste to change their clothes, whether only damp or sooking wet, as soon as they cease all active exercise, and are about to remain at rest. It is necessary, in case of weakness from illness or a feeble constitution, to guard against all sudden changes of temperature, and, therefore, it will be well to warm each garment by the fire before it is put on, that, on being brought close to the body, it may not take away more heat than it gives.

The old Duke of Wellington is said to have had as many varieties of cloaks and overcoats as there are changes of weather. As the climate of England, where he lived, is very variable, the duke's wardrobe must have been as full of odd garments as the shop of a Chatham Street dealer

in old clothes. His Grace very sensibly resolved to adapt his dress not only to the change of season, but to the temperature varying from day to day. Accordingly, every morning, before setting out on his daily ride or walk, his well-known aquiline nose might be seen for a moment at the window just opened to a crack, testing the sensation of the weather, and taking an observation of the thermometer hanging there. He, having thus noted the temperature, would bid his valet bring him the corresponding covering. Now it would be the freezing-point fur cloak, now the forty-degree cloth coat, again the temperate light military cape, and so on through all the range of the thermometer and the wardrobe.

Every one is not a duke with an infinite clothing department at his command. Each person, however, who has two or three suits at his service would do well to adapt the use of them to the variations of the weather. The rule for young people, in the matter of the overcoat, is to put it on when they first go out of a warm room into the cold air of a severe winter's day. They may lay it aside on beginning active play, but they should resume it at once on ceasing. The habit of remaining in-doors during cold weather and "hugging the fire," as it is called, is a dangerous one. The heat obtained in this way only warms the surface of the body, and does not supply what is necessary not only for comfort, but health, and which can only be obtained through active exercise and free breathing in the open air.

"He who does not dress warmly enough must be either a fool or a beggar," is a shrewd Scotch proverb. If a person has the means to clothe himself properly, and does not do so, he is supposed to be the former; and if he has not, he cannot, and therefore may be called, in one sense, the latter. Children are very apt to laugh each other into such absurdities of conduct. With the false idea, started probably by some lad who has no warm coat to his back, and, like the fox without a tail, is anxious that all his fellows should be in the same predicament, that it is not heroic to enjoy the comforts of substantial clothing, whole schoolfuls of boys will bare themselves to every wind that blows.

The surface of the body cannot, as is often supposed, be hardened by continued exposure to cold or intemperate weather of any kind. The skin, when in a wholesome condition, is moist and soft, and, being constantly renewed, retains to a great extent its freshness and delicacy throughout life. Many people have an unnecessary dread of the cold air, which seldom, if ever, unless its temperature is so excessive as to produce frost-bites and other worse effects, does any injury to a healthy person. It is common to attribute to it coughs, catarrhs and other affections of the breathing apparatus; but these are not caused directly by its means. A sudden transition from a high to a low temperature, if the body should not be properly clothed, is certainly harmful. When, however, there is exhaustion, as is apt to accompany the heat which follows hard work or active exercise of any kind, it is not doubted that a sudden exposure to cold is full of risk to health.

The rule of safety is to guard against the changes of temperature. Especial care should be taken to protect the person with an abundance of warm covering at the very moment when there is a cessation of heat-

ing exercise of any kind. It is just then, however, unfortunately, that, with the feeling of excessive warmth, there is the least inclination to burden the body with heavy clothing. Boys, and girls too, will thus often, after active play, cast off any easily shifted bit of clothing, and throw themselves, heated and exhausted, on the cold, moist ground. Nothing can be more dangerous. Instead of stripping at this time, they should put on additional covering, and avoid lying down, especially on such a couch as is offered by the bare, damp earth.

With the notion, apparently, that there is something poisonous in the cold air, an immense deal of care is taken that not healthy only, but sick persons shall not be exposed to it. This is particularly so in regard to any one who may be affected with what is generally termed a "cold." The doctor, who, on first entering the bedchamber of a sick person, closed tightly against every breath of outward air, thrust his cane through the panes of the windows, much to the astonishment and horror of a stifling crowd of visitors, feared only the corruption of the atmosphere within, and boldly invited the pure atmosphere from without, with all its coldness. The quick recovery of the patient justified the doctor's audacity.

The usual "petting," as it is called, of a common cold, where there may be merely a running from the nose or a slight cough, without any extraordinary heat of the skin, or any other mark of fever, is by no means the best manner of getting rid of it. It will be found that moderate exercise, in the open air, with a prudent adaptation of the clothing to the weather and season, is the best treatment. Monsieur Dupre, a great French singer, who had every motive for protecting himself against a cold, for each attack was a loss to him of thousands of dollars, declared, as the result of his experience, that it was better not to use too great or many precautions. He avowed that the best protection of all was to fortify the body by exercise in the open air during all seasons and weather.

There is a tendency on the part of one who is subjected to, and begins to feel, the influence of a very low temperature to lie down and sleep. Dr. Solander, who was the surgeon and naturalist of an early arctic expedition, reports that this somnolency was so irresistible in his case, that although he had impressed upon his companions the necessity of not giving way, or letting others give way, to it—for sleep, he knew, under such circumstances is certain death—he was the very first person to yield. Fortunately, his comrades had heeded his lesson, and as soon as the doctor fell back and threw himself upon the ice to repose, they aroused him, and continued to keep him awake, by all the means in their power, notwithstanding his most urgent solicitations to be left alone to sleep and to—die. They succeeded, in spite of his resistance, in disturbing his repeated slumbers, until he finally became wide awake to the imminent danger he had run, and lived to thank his companions for their faithful obedience to his instructions

Frost-bites, of which the most familiar form is the common chilblain, are best avoided by brisk exercise in the open air, and keeping away habitually from hot stoves and fires on entering the house after exposure to severe cold. Rubbing the frost-bitten part with snow or washing it

rapidly with ice-cold water is the best treatment at first. Subsequently, if the skin should not be broken, friction with spirits, and an occasional bath of hot water with mustard, will be useful. Hartshorn and oil mixed, and the tincture of iodine, are good remedies; and when the skin is broken and an ulcer formed, the best application is what is known to the apothecary as zinc ointment.

CHAPTER VII.

Summer Dress.—Cooling Processes.—Head-coverings.—Franklin's Experiment.—Effect of Colors.—A Philosopher in an Oven.—The Transpiration.—How a Hot Climate is Endured.—Whites and Blacks.—Innocence of the Sun.—Sunstroke.—Its Treatment.—Light.—Effect upon Health and Life.—Rarity of Good Water.—Pure Water of Nature.—How Polluted by Man.

If we could regard merely our comfort, we should probably choose during the hottest weather to go naked, or wear the scantiest clothing, like the savages of some tropical countries. Clothing of some kind being indispensable, even in the hottest weather, it should be so adapted in material and make as to interfere as little as possible with the natural cooling processes of the body. All elaborate dressing, with multiplicity of fold and weight of trimming, must be avoided. To promote the evaporation of the moisture from the surface of the body—which is one of the most effectual means of getting rid of superfluous heat—the covering should be as light as possible. People with no pretensions to philosophy of any kind will instinctively, when free from the fear of fashion, act in accordance with its principles. The heated laborer strips off his coat, bares his sweaty throat, breast and arms, and loosens his girdle. He is thus refreshed by the cold which comes from the evaporation of the moisture of his body on its exposure to the surrounding air.

As in cold weather we cover our bodies with furs, thick woollens, and other bad conductors to keep in the heat, so in hot weather we should take care that the clothing which propriety compels us to wear shall be composed of the best conductors, in order to let out as much heat as possible. We therefore must dress in linen, cotton, and such like material.

Of course, in a climate like ours, it is generally thought prudent to wear, even in summer, flannel next to the skin; for, though it has the disadvantage of being a very bad conductor, and keeps in the heat of the body, it has the advantage of being a good absorber of moisture. At any rate, it should be worn over the stomach, which requires to be guarded in hot weather more than the chest, which it usually covers. It is well to avoid the use of linen next to the skin; but cotton, which is the more common wear in the United States, is both comfortable and safe during our summers, with all their possible changes.

To protect the person from the direct rays of the sun, umbrellas and parasols are carried, and wide brim hats worn.

There is a familiar experiment, first made by our countryman, Benjamin Franklin, which proves that the color of all materials has a great effect upon their power of absorbing heat. He took a number of pieces

of cloth of the same size and kind, but of different color, and placed them on a bank of snow, exposed directly to the sunshine. He soon found that the snow melted more rapidly under some than others, and discovered that this was in proportion to the darkness of their tint. The snow under the black cloth was the first, and that under the white last to melt. He accordingly drew the inference that the absorbing power of heat of dark substances was greater than that of the lighter color. The result of this experiment has been acknowledged as establishing a scientific principle which practical people have confirmed by the experience of habitual usage. White garments have been found to be much cooler than dark ones of the same material. When a boy, therefore, throws off his jacket, which is ordinarily of some deep color, and exposes his shirt-sleeves, in hot weather, he cools himself by two processes. He not only lets out internal heat by getting rid of a bad conductor, but keeps off external heat by substituting a bad absorber for a good one.

A white or light-colored straw hat will, of course, be cooler to the head than a black or dark-colored one. As the hair, if it is possessed in ordinary abundance, will generally be a sufficient covering in all seasons, it may be doubted whether a black hat, of any material, is ever necessary. If fashion were less peremptory, and people were allowed to regard their sense of comfort more, the white hat would be oftener seen even in winter.

A famous English philosopher tells us that he went into an oven hot enough to broil a beefsteak, and remained there until one was thoroughly cooked. He moreover states, that during the whole time he bore the heat without much discomfort, and with no serious consequence. He took care, however, to protect his hands and feet with several layers of felt, or some other bad conductor, lest the contact with the pavement or the walls of the heated oven should broil his flesh, as well as that of the cooking steak. While making this experiment of his power of enduring heat, the philosopher, as may be readily conceived, was constantly in a state of profuse perspiration. When the heat is great, there is an abundant transpiration, the moisture of which, on evaporating, produces cold, and thus checks the increase of warmth, come from whatever source it may. It was by this means alone, in fact, that he was preserved from a broiling as thorough as that of the dead piece of meat at his side. People living in hot countries, by the same means, are able to live in good health and tolerable comfort during the hottest weather.

Negroes, or dark-colored people of some kind, are provided with a charcoal like substance under the skin—from which its tint comes—that seems to protect their bodies from the ill effects of prevailing heat. In Africa, the East Indies, and other hot climates, the white people of European descent, although able by natural endowment and prudent precaution to enjoy comfort and health in a more or less passive state of repose, cannot easily or safely vie with the dark native races in bodily activity while exposed to a tropical sun.

People are apt to be unnecessarily timid of exposure to the rays of the sun. They seem to fear them as some old-fashioned folk do the light of the moon, as if they attributed to solar as to lunar radiation an influ-

once fatal to mortal wits. It is now acknowledged by sensible persons that there is no danger to be feared from the moon, and it may be doubted whether the sun is a much more reasonable cause of alarm.

There is a serious affection called sun-stroke, which is generally supposed to be a direct effect of the solar rays, but is oftener due to the exhaustion from hard work, or severe exercise while exposed to them. While people may generally without harm, and even with benefit, bask in the summer sun, it is not safe for them to move actively, as in severe work or exercise, if its rays are striking directly upon their heads.

Shady places should be sought on every occasion of active out-door amusement during the hottest part of the day, and all temptations to long runs and great efforts of strength in the broiling sun be avoided.

In any case of sunstroke, or great exhaustion from exercise while exposed to the heat, the first thing to be done is to remove the sufferer from the causes which are supposed to have produced it. He should be carried to the nearest shade, or, at any rate, protected from the sun's direct rays, wherever he may be, and made to lie down at full length, and cold water applied at once to his head and lips. His lower limbs should be kept warm, with such covering as there may be at hand, and his neck and body freed from any close-fitting garments or binding article of dress. Most will revive readily under this simple treatment.

The gardener who cultivates celery for the table is careful to heap the earth about it so as to exclude the sun's light, in order to give it the whiteness and tenderness which are required to please our artificial taste. Greenness and toughness are its healthy qualities, but we prefer its diseased ones. The same effect follows the same cause in human beings. Foolish women, however, who seem to think that they are only created to be looked at, and, with the false idea that tenderness and paleness are essential to beauty, are as careful as the gardener with his celery to shut out light of the sun, lest they should have too much color and vigor to please the fashionable taste. They pull down the blinds at home, and spread their parasols whenever they go out, and thus take care not to let a glimmer of sun on any occasion brighten or invigorate them.

Miners who spend their few days beneath the surface of the earth, and the many miserable inhabitants of large cities who are compelled to make their abodes in cellars and other holes burrowed into it, soon become sick and quickly find a grave.

Not only is the sun's light a good preserver of health and vigor, which every healthy person, young or old, should freely avail himself of, but it is one of the most useful remedies for weakness and disease. It is the practice in the Child's Hospital in Paris to arrange the little patients in successive rows upon a broad wooden structure, and expose them on every clear, warm day directly to the rays of the sun; taking care, of course, as should always be done, to protect the eyes from the glare. Nothing is found to offer these weaklings such a chance of becoming strong enough to keep and enjoy life. "Second only to their need of fresh air is their need of light," says Miss Nightingale, in the account of her great experience with the sick. "After a close room, that which hurts them most is a dark room, and it is not only light, but direct sunlight they want."

There is nothing so hard to find nowadays as a glass of good water. I is no fault of Nature, for she supplies this essential element of life in great abundance and purity. Her grand process of distillation is ever going on, by which she raises from exhaustless oceans clouds of vapor, and pours down from them showers of rain and storms of snow upon the vast surface of the earth; and thus fills and refills the bubbling springs, the countless trickling rivulets, the mountain torrents, the meandering streams, and great rivers, which, after the beneficent purpose of this glorious gift of water to the world has been effected, return it to the source whence it came. Here, in the grand laboratory of nature, it is again made fit, and sent to renew, in vapor, cloud, spring and stream, its generous service; and thus it goes throughout all time, from ocean to river, and river to ocean.

Water is not only naturally supplied in exceeding abundance, but in great purity, for the use of man. The rain, if collected anywhere away from the touch of human pollution, will be found to be almast chemically pure. The water which nature supplies contains something more than the two gases, hydrogen and oxygen. Even the rain-drop is always impregnated with the various matter met with in the air during its fall from the cloud to the surface of the earth. Rain-water, even, has a flat, disagreeable taste to those unaccustomed to drink it. Carbonic acid gas in certain proportions, and other constituents ordinarily found in unpolluted springs and fresh streams, seem essential to the flavor of drinkable water. Notwithstanding the abundance of the natural supply, it is a very difficult matter indeed to obtain the smallest quantity of wholesome water. All its sources, showers, springs, rivulets, and rivers, wherever they fall, rise, and run within the easy reach of man, are very apt to be polluted by his touch.

Civilization has its bright side, and its dark and dirty side, too, in the dingy shadow of which all civilized men should hide their heads in shame. There is nothing so disreputable to so-called modern progress as the complacency with which it continues to flounder in its own filth. The artist cannot give reality to his conception of grace and beauty without dribbling paint, or raising a dust, or making a stain or a litter. All the great works devoted to the supply of material for the use and enjoyment of civilized beings, whatever may be its nature, are producers of filth. This, moreover, is often the greater as the manufactured product is the more delicate. The oil which we burn, and the soap and perfume which scent the hands and the handkerchiefs of the exquisite, are of so foul an origin that neither the sources from which they come, the processes by which they are made, nor the waste substances they leave, are endurable within smelling distance, and are universally pronounced nuisances.

It is this foul waste matter of various contrivances of civilization for adding to the beauty and happiness of life, which so greatly pollutes the sources of the water which is supplied by nature in such abundant purity. The smoke, vapors, and dust rising from every inhabited town or city, turn each drop of rain, pure as it may have fallen from the heavens, into a drop of poison before it reaches the earth. The sweepings and refuse of the houses, shops, and streets, and the offal of the

shambles, and the waste products of manufactories of all kinds, borne away sooner or later into the streams and rivers, contaminate them. Mankind have been so eager to satisfy the demands for work, that they have not taken time to clear away the litter. Thinking only of the immediate profit, from the urgently required and quickly dispatched article, they have failed to calculate the future loss to health and happiness from the permanent nuisance. Thus their abounding waste is left to accumulate, or flung carelessly aside, to be washed away and mix with and poison the water-sources, which become in this way one of the principle means of producing and disseminating disease.

CHAPTER VIII.

Poisoned Water.—Diffusion of Cholera and Typhoid Fever.—Germs.—Death and the Dairyman.—The Necessity of Water.—Prejudice against Water as a Drink.—Precautions to be taken in drinking Water.—Suitable Beverages for the Young.

With the dirty habit that so-called civilized people have of casting all their filth into the nearest stream or river, and crowding pigsties, cow and stable yards, necessaries, dunghills, dust-heaps, cesspools, and the various receptacles of dirt close to springs, wells and other sources of the water used, it is not surprising that the water we drink is not only thus made generally unwholesome, but is often turned into a specific poison, so virulent as to cause some of the deadliest diseases that infect the human race, such as cholera, typhus and typhoid diseases, the small-pox, scarlet-fever, or some other pestilence, which attacks whole communities. In certain diseases, as the typhoid fever and cholera, for example, the more common mode of the passage of the germs would seem to be through the bowels of the diseased person, and these are the germs which by the filthy practices of mankind are chiefly allowed to get into the water of common use.

Cholera, whatever may be its origin, is undoubtedly propagated by foul water. The course of the chief water pipes in London was found to indicate exactly the progress of this fatal disease during several epidemics. Those districts where the water thus supplied was foul were struck with cholera, while those furnished with pure water escaped unharmed. In Guilford, a small town in England, two hundred and fifty cases of typhoid fever occurred within the short space of a single month. The district in which they happened was found to be supplied with water from "a reservoir filled from a new well, which, through the drainage of a fissured chalk stratum, received the soakage of several sewers."

Not long since, there broke out in one of the most fashionable quarters of London a frightful epidemic of typhoid fever. As case after case occurred, rapidly following one another, it was noticed that the disease was confined to certain houses within a fixed boundary. It was discovered that they were all supplied by the same dairy-man, and that his daily course in distributing milk corresponded exactly, house to house, row to row, and street to street, with the march of the typhoid fever. It was ascertained that a laborer had died of typhoid fever on the farm whence the milk was obtained, and the common receptacle of

all filth, that of the diseased man included of course, was found to be so close to the source of the water in daily use that the contents of the two could not fail to intermix with each other. It did not appear that the fatal milk had been "watered" by this horrible mixture, but it was acknowledged that the cans had been daily washed, if such a term can be used, with it. Thus the germs which had passed from a single laborer, dying of typhoid fever, in the country cottage of a dairy-man, had been conveyed to the great metropolis, and poisoned a large number of the inhabitants of one of its most opulent and apparently best-protected districts.

Beer, wine, spirits, and the various other kinds of fermented liquor so universally drunk, find the best apology for their use in the difficulty of getting pure water. The pollution of springs, wells and streams becomes thus a source of moral as well as physical corruption, and that most degrading vice, drunkenness, is greatly due to the scarcity of pure water. There is in many countries such a prejudice against water as a drink, that it seems almost to have gone out of use for that purpose. There is nothing which so much astonishes a native of Germany and France as the call by an American traveler for a glass of water. This common aversion to water as a beverage, and the general opinion that it is unwholesome, come probably from the fact that it has been found by experience to be a frequent cause of disease. That it should be so is not surprising, for throughout the continent of Europe there is an almost universal ignorance and disregard of the laws of health.

Children, in the heat of play, are ready to quench their thirst at any source the most convenient. They make no inquiry and heed no warning, but will scoop up handfuls of water out of the first running creek, or open their mouths at the spout of every corner pump. Water, if pure, may be drunk at any time and in the greatest abundance, but there is a method which must be strictly followed in swallowing it. It should never be gulped down, as it is apt to be, by children who will drink a full tumbler without drawing breath. The first mouthful should be completely swallowed before a second draught is taken; and if the drinker is heated, the water should only be sipped, with frequent pauses after every sip or two. With these precautions, the coldest, even iced, water, and in abundance, can be drunk with perfect safety under any circumstances, whether of health or sickness.

There is no beverage which can be safely substituted for water, for the use of youth, at least. They had undoubtedly better not take even tea or coffee, however diluted. Wine and spirits should never be touched by children, not so much on account of their immediate effects, which are not without risk, but for fear of creating by habit the unnatural taste, for such it is, for strong drink, the fatal consequences of which to decency and virtue of life even the youngest must be aware of.

CHAPTER IX.

Digestion.—Mastication.- Teeth.—Use and Abuse.—Saliva.—Use and Abuse of Taste.—Swallowing.—Its Dangers.—Mr. Brunel's Escape.—Remedies for Choking.

As most food, before it is fit to be eaten, has to undergo certain processes of preparation, so when taken into the body it can only be adapted to the purposes of life after being subjected to various operations. These are described under the general term of "digestion," a complicated function composed of many parts, which, being somewhat similar, may be compared to the familiar process of cooking.

The cutting or chopping of the various articles of food by the cook to make them yield more readily to the boiling, roasting, stewing, frying, and other kitchen doings, is like the first process essential to animal digestion. This is called "mastication," or "chewing." The instruments for the purpose with which the human body is supplied are termed "masticators," but are much better known under their familiar name of teeth. Mastication is a very important yet simple process, but it is apt to be ill performed, or not at all. Children are generally very negligent of this necessary work. Possessed naturally of the best possible tools in their regular sets of firm teeth, they are applied to every imaginable purpose but the right one, the masticating of food. A child will delight in splintering a pignut, impenetrable to the sharpest-toothed squirrel, but will scorn to use a tooth in crushing a morsel of bread or dividing a bit of tender meat. The food of most animals requires to be well broken up, and softened almost into a paste, before it can be properly acted upon by the various other processes essential to good digestion, and consequently to vigor of health and life.

The bird which apparently gulgs down its food whole without first chewing it, has an apparatus which serves the purpose of the set of teeth it has not been provided with. Its gizzard is composed of an exceedingly thick and strong hollow muscle which contracts upon the food, and greatly assists the grinding power of that masticating organ. Every one who has any experience of keeping tame birds is well aware of the necessity of spreading earth or sand on the bottoms of their cages, that they may have the chance of furnishing themselves with the pebbles or gritty particles essential to the due breaking-up of their food.

Children should learn that it does not matter how easy to swallow the morsel may be, it requires to be well chewed and turned about in the mouth, and should never be bolted whole. Children must remember that they are not boa-constrictors, but animals provided with teeth expressly for the purpose of chewing. Hasty eating is not only an offense against decorum, but is often the cause of the disease termed "dyspepsia," and of various serious derangements of the stomach and other organs of digestion. The teeth must be kept in a proper condition. They are tools well tempered and of great durability.

It is common to treat the first set of teeth—which begin to show themselves in infancy, and continue to come in succession until they reach, at the early age of eight or nine, from twenty to twenty-four in number—as of very little importance, and hardly worth any care, since they last only to the eleventh year. This, however, is a grave error, for

the beauty and strength of the second set, or the thirty-two *permanent* teeth, as they are termed, will depend a good deal upon the treatment of the first, or twenty four shedding ones. They are closely related, for hardly is one of the latter fully developed when another of the former begins to grow beneath it, and what is harmful to either will be apt to be so to both. The first teeth should be kept clean by daily washing of the mouth in the earliest periods of childhood, and in the more advanced by the use of a very soft brush. The attempt to crack nuts and gnaw ivory buttons, or to do anything, in fact, by which the teeth are jarred severely, or may be chipped, will not only injure them, but seriously damage the prospects of their successors. The common impatience to get rid of the first set of teeth leads to the working at them when they may be a little loose. It is a bad practice. They may, at the last moment, when their hold is of the slightest, be aided by the gentle effort which will only be required to detach them.

The *permanent* teeth should be cleaned at least twice a day—on rising from and going to bed—and it would be well, also, to rinse out the mouth after each meal. A soft brush only should be used, and nothing but pure water will be necessary if the cleansing of the teeth is frequent. When from neglect they have been allowed to become dirty, a little of the finest soap may be employed. All fancy powders and washes should be avoided, for, however good their immediate effect may seem, their habitual use will probably destroy the enamel of the teeth. This enamel, which covers the upper part or crown of the tooth, as it is called, is certainly a very hard substance, but even it will yield to constant friction of hard or application of acid substances. It also is apt to be chipped off by being brought suddenly and violently into contact with any hard material, whether it be hickory-nuts or musket-balls; and if it should be chipped off or otherwise destroyed, the decay of the tooth will be sure to follow.

The shock, moreover, which the tooth receives from cracking nuts, or attempting to crush any excessively hard substance, will loosen it from its socket in the gum, which will become, in consequence, detached from its connection with the crown of the tooth, which is there protected by its coat of enamel, and, shrinking, expose the root of the tooth which, being unguarded, will soon yield to decay.

It is not enough for the food to be cut up by the front teeth and ground by the back ones. It has to be moistened, for otherwise it could not be readily swallowed. While the chewing is going on, the food becomes mixed with the *saliva*, or spittle, supplied by little glands inside of the mouth. This is a fluid composed of water and a small quantity of albumen and some soda. These have not only the effect of smoothing and making the chewed and moistened food slippery, that it may be more easily swallowed, but also dissolve it to some extent, and thus assist in preparing it for the uses of the body. The habit of throwing saliva from the mouth on every occasion, or polluting it with tobacco-juice or anything else, is not only nasty, but harmful.

By chewing, the morsel is turned round and round in the mouth and, being thus brought into close contact with the tongue and the palate, where there are nerves especially provided, is fully tasted and its flavor

extracted. This taste is given us both as a motive to take food and as a means of judging of the proper kind. The tongue and palate, therefore, not only administer to our pleasure, but watch over our safety. They are ordinarily faithful servants if not spoiled by over indulgence or by brutal treatment. Young people should check their excessive fondness for sucking sweets, their great proneness to imitate older fools in chewing and smoking tobacco, and their own frequent practice of exercising their jaws and powers of suction upon the tough india-rubber, the flinty rattan, and other substitutes for the sickening quid and cigar.

The morsel of food being well chewed, softened, smoothed and tasted, is now, if acceptable, swallowed at the will of the eater. The windpipe and the gullet lead from the mouth to the interior of the body. Through the former the air passes in and out of the lungs, and through the latter the food enters the stomach. They both open at the back part of the mouth close to each other, the windpipe just in front of the gullet. There is a lid attached to the entrance of the former, over which all food must pass to get into the latter. This lid is ordinarily closed during the act of swallowing, and the food passes readily over its smooth surface into the opening of its proper passage, the gullet. Sometimes, however, this lid is suddenly opened just as the morsel to be swallowed reaches it, and then the food gets into the opening of the windpipe—*going the wrong way*, as it is familiarly called—when that sputtering and coughing ordinarily occur which so frequently happen, especially to young people, when eating. The sputter and cough are the means by which the windpipe tries to get rid of the intruding food; and, fortunately, these generally succeed, or very great mischief might occur. Children are often told not to speak while they are eating, and they would do well to obey the command, not only for politeness, but for health and life's sake.

An accident which befell Mr. Brunel, the famous English engineer, who designed the gigantic *Great Eastern* steamer and completed the construction of the Thames Tunnel, will show the danger there is of whatever may be in the mouth falling into the windpipe. Mr. Brunel was pretending, greatly to the delight of a group of little children, to swallow a sovereign, the English gold coin so called. He had put it in his mouth for the purpose of his playful deceit, when he was suddenly tickled to laughter by the startled surprise of the credulous youngsters about him, and the piece slipped into his windpipe. All the usual efforts of sputtering and coughing proving of no use in getting it up again, he gave over in despair, and summoned his doctor. His attempts, however, to extract the sovereign were in vain, and he called to his aid some of the most eminent surgeons of London. After they had resolved upon the serious surgical operation of cutting into the throat, Mr. Brunel cried out, "Turn me upside down!" Fortunately they did as they were bidden, and, taking the patient by the heels and lifting them up, while his head was allowed to hang down, they gave him a vigorous shake, and out came the sovereign, rolling upon the ground.

Hasty guzzlers, however, will sometimes, in their voracity, attempt to swallow such enormous masses of food that they are too big for even

the exceedingly great capacity of the gullet, and they may accordingly stick in their course. Death has sometimes ensued in consequence; but generally, in case of a stoppage, a patient, natural effort will succeed in removing it.

A fish or any other bone or sharp hard substance will be sometimes incautiously taken into the gullet and stick. In such a case, an attempt to bring it up again will generally succeed, if the finger be thrust well back into the throat, so as to tickle it and to cause a reverse movement, as in vomiting. Swallowing, too, a morsel of dry bread will often effect the purpose by driving down the clogging or sticking substance.

CHAPTER X.

Action of the Stomach on Food.—Effect of Activity of Body and Mind.—Chyme.—Beaumont's Experiments.—Comparative Digestibility of Different Food.—Variety.—Feeding Children.—Proper Diet for them.

The food or whatever is swallowed passes through the gullet into the stomach. Here it undergoes the chief process of digestion, which in this stage is very like, indeed, the operation of cooking. Heat, moisture, movement and a solvent are the essential requirements of each. The stomach has in its natural heat a substitute for the kitchen-fire; in its gastric juice, a liquid which it pours out whenever its digestive action begins, a supply of both the water and salt indispensable to the purpose of the cook, and by its constant contraction and expansion it keeps up a movement which the constant stirring of the pot could hardly equal.

As soon as the food enters, there is a rush of blood toward the stomach by which its heat is increased to the proper degree necessary for the digestive operation it has to perform. It is owing to this that so many persons feel, after eating a full meal, a sensation of cold over the whole surface of their bodies. This effect, if not excessive, may be regarded as a good sign, inasmuch as it is an indication that the process of digestion has vigorously begun. On the contrary, when there is flushing of the face and an uncomfortable sense of general warmth, it is a proof that the stomach is oppressed by some cause or other, and, not being in working order, refuses the supply of blood or heat which it would otherwise accept.

Active exercise after a plentiful meal is rightly regarded as unwholesome. There can be no vigorous movement of the limbs for any length of time without causing a rush of blood toward the surface of the body, and accordingly checking its flow to the stomach, and thus depriving it of the heat essential to its work of digestion.

Children are advised to postpone, until a half-hour at least after each solid repast, the running of races, skipping of the rope, baseball and all other games and amusements which require considerable effort. We urge upon the children the necessity of avoiding all hard study immediately after meals. Intellectual exercise is no more consistent than is physical exertion. They should never set children to work at their

lessons until a full hour after the solid meal of the day. Whatever enters the stomach is turned into a pulpy kind of substance termed *chyme*.

Some liquids remain unchanged, and pass at once from the stomach into the general system, and thus the quick action of various deadly poisons are accounted for. Alcohol may be regarded as one of these. If it does not kill as rapidly as some others, its power is immediately shown in a way which leaves no doubt that it has begun its deadly mischief. On examining after death the bodies of persons who have died of drinking whisky, brandy or other spirits, the alcohol, which is the chief part of these, has been found in the brain unchanged in its course through the body. There can be no doubt that this subtle liquor is no sooner swallowed than it starts for the head, where it quickly arrives, in spite of the long zigzag paths it may have to take, and begins at once its mischief. Quick as it goes, however, it does not fail to leave on its way harmful traces of its fatal touch. However small the quantity swallowed, the effect of alcohol on the brain is observed immediately in the excitement of that sensitive organ, and shows itself even in the dullest person by an unnatural wakefulness of expression, liveliness of manner, and freedom of talk. These effects are probably the chief motives which incline stupid and woe-begone folk to the use of this dangerous spirit. This excitement of the brain, moreover, by alcohol is what induces the physician to have recourse to it as a remedy in cases of illness where a sudden arousing of the nervous system may be thought urgent, as in the prostration from low fevers, fainting, sunstroke and exhaustion from excessive fatigue. All prudent doctors, however, use this, as other poisonous medicines, with the greatest caution, and only in cases of emergency. Some physicians are so conscious of the dangers of alcohol, that they have even banished it entirely from their list of remedies.

To young people, especially, alcohol in any form is particularly harmful. Children have been frequently poisoned to death by whisky, brandy and other strong drink which they have taken, heedlessly, of their own accord, or been induced to swallow at the suggestion of brutal drunkards. All spirituous liquors, of whatever kind, and however agreeable to the taste as they are often made by sugar and syrups of various sorts, must be shunned like every other poison. Water, too, is quickly absorbed upon being taken into the stomach, and a great quantity must be swallowed, either pure or mixed, for it forms about nine-tenths of the whole composition of the body.

Although the stomach is forced to receive all substances the gullet is voracious enough to swallow, it is not always able to make use or readily to get rid of them. It has only a narrow opening called the *pylorus*, or "guard at the gate," at the end where it connects with the adjoining bowel, adapted for the passage of the half-fluid chyme. When, therefore, the stomach gets hold of something which is too hard to be turned into this soft substance, or too large to pass off with it, it is apt to remain for some time, at least, and do a great deal of mischief.

Death has occurred from swallowing peach and cherry stones. There is a specimen in the College of Surgeons of Edinburgh of a portion of bowel taken from the body of a child. The bowel is enormously en-

larged beyond its natural size, and is packed as tight with cherry stones as a winning boy's bag with marbles. Death, of course, was the consequence, and it only seems surprising that it does not oftener occur.

A young gentleman of New York died, after very severe suffering, from a cause which greatly puzzled his physicians until, examining his body after death, they found a small piece of oyster-shell sticking in a part of his intestine and perforating it. This fatal bit had probably been swallowed unconsciously in that every-day act of taking a rapid lunch, and proves how necessary it is to avoid haste and carelessness in swallowing the simplest meal or food.

Judicious parents will take care that the child's table—as, in fact, their own—should never contain anything but what is wholesome and digestible, and insist upon their children strictly obeying the rule of eating what is set before them. There is no reason why the diet of a child in its teens should differ from that of a grown-up person; although the latter, if in full health and activity, will require a larger quantity of solid food. The appetite, however, of the youth is apt to be very great, and his requirements, moreover, large, to supply the waste from the excessive mobility, and the material for the rapid growth of that period of life. If the food is plain and substantial, there is little necessity of checking a child's voracity. He may safely be left to roam at will over any extent of stale bread, or plunge into any depths of homely porridge and hominy, without a muzzle to appetite; the instinct of which, aided by that of a simple taste unperverted by luxury, will prevent all likelihood of excess. Give the child, however, the freedom of the pastry-cook's shop, and he will eat and eat, cram and cram, and ask for more, unchecked by anything less than a colic or a vomit.

CHAPTER XI.

Children's Likes and Dislikes.—Idiosyncracies.—Variety Essential to Children.—The Child's Table.—Regularity in Eating.—Proper Hours for Meals.—Before, at, and after Meals.—Dangers of Careless Children.

Children are apt to express likes and dislikes of this or that kind of food, which have no other basis than mere fancy. Sometimes, with the very decided protest, "I can't eat *that*," they will obstinately refuse every member of the vegetable kingdom and set their teeth against flesh of this or that especial variety; and again, they will not taste fish or fowl.

There are no doubt peculiarities of constitution that certain persons have, which not only give them an aversion to the flavor of some particular and generally acceptable food, but prevent them from digesting it. We know a gentleman who always turns away with disgust from a proffered strawberry. There was also a lady of our acquaintance to whom the smallest portion of any kind of fish would act with the promptitude and certainty of the most powerful emetic. Parents are often wrong in urging upon a child certain kinds of diet in excessive quantity merely because they believe them particularly healthy. Having heard that fatty substances are useful remedies in certain diseases, many parents undertake an active oleaginous course of treatment

in their families, doubly buttering the daily bread, picking at the bits of yellow fat from the dinner joint, and thrusting them down the throat of each youngster, as if he were a *blubberoorous* Esquimau. Fat may be conceded to be not only a useful, but an essential part of human diet; but it is not necessary—in fact, it is unwholesome—to gorge people with it in a temperate climate.

It is a common error of parents to suppose that a child's food must be entirely limited to two or three simple articles of diet. To exclude butter, sugar, and some of the various condiments absolutely, is a mischievous mistake. If fed solely upon plain meat and potatoes, rice or porridge, milk or dry bread, their taste soon becomes wearied with the vapid uniformity, and they thus acquire a disgust for these and like articles of diet which would continue to please if they were presented to them in due proportion and variety. Food, to answer fully its purpose in the human economy, must not only be of a nutritious, but of a palatable nature.

The common meal of grown-up people and children should be uniformly simple, that they may both partake indiscriminately of its healthful abundance without chance of mischief to either. In a well-arranged plain family dinner, the most substantial and nutritious articles of diet come first, and the less substantial and nutritious last. True, it is customary to take the soup at the very beginning of the meal; but this, though a fluid and apparently an exception, is, if well made, really one of the most nourishing of foods. At a properly set meal there is little fear of a child eating to excess, provided he has been taught to take the food in the order provided. There is no reason why young people should be deprived of their prerogative of pie, or any privilege of dainty, if the food be wholesomely prepared; but they should be made to understand that such things are to be regarded as subordinate to the more nutritious meat and vegetables, which ought to form the main part of the dinner.

We Americans are apt to do everything in haste, and in nothing do we show our characteristic hurry more remarkably than in the expeditious manner in which we dispose of our superabundant meals. An Englishman relates that he called upon a business man in one of our cities, and found the door locked and a notice upon it which read: "Gone to dinner—will return in five minutes." What time is gained in this way is dearly paid for by the discomfort and ill-health which are sure to follow, as nature is not to be hurried with impunity by the impatience of man; and if pushed or interrupted, will either do her work imperfectly or stop it altogether.

Children are supposed to be in a perpetual state of hunger, which is rather owing to the constant desire of pleasing their taste, than of satisfying the cravings of their stomachs. It is possible that some children, especially when very young, may require to be fed oftener than the three established meals would allow. The practice of munching tit-bits of any kind, fruits, pastry, and sweets, at any and each moment of the day, takes away the appetite for the regular meal, and weakens and irritates the stomach by keeping it in a constant state of useless activity.

People should not hurry through their meals, nor sit down to them without a certain deliberateness and preparation.

CHAPTER XII.

The Muscles.—Their Nature and Action.—Exercise.—Its Effect on the Muscles.—Muscular and Fat People.—Cure for Fat.—Natural Exercise.—Checks of Gentility, Dress and Fashion.—Precocious Fine Ladies and Dandies.

The flesh, as we ordinarily call it, of our bodies is mainly formed of what the anatomists term "muscles." The purpose of these is to produce various movements, most of which are under the entire control of will, some only partly so, and a few not at all. The arm and the leg have muscles of the first kind, which are moved, as we know, at our pleasure. The throat has muscles of the second kind, which are put into motion in swallowing—a process at one time voluntary, and at another involuntary; and the heart has muscles of the third kind, which act altogether independently of the will.

Exercise is merely putting into motion the muscles which we can move at our will. In walking and running, boxing and wrestling, and in most active sport, there is a constant muscular expansion and contraction. The effect of such exercise upon the muscles is very advanvantageous, though the benefit is by no means confined to them alone. The frequent use of a muscle endows it with a greater power of fulfilling its purpose. Look at those laborers stripped to their work, who are ever wielding the pickaxe and sledgehammer. What brawny figures they have! What bull-like necks! What surging chests and mighty arms, of a mould hardly less firm and a substance hardly more yielding than the iron instruments which they use as deftly and easily as if they were parts of themselves! The shrivelled shanks and the dangling arms of skin and bone of the lazy lounger at home are the natural results of letting the muscles shrink away for want of use.

Fulness of bodily size by no means implies largeness and strength of muscles. Little exercise and much feeding will produce a great deal of fat, which soon wraps the whole body in its soft folds of blubber, and leaves no space for flesh or muscle, and even turns it, if it should exist by chance, into its own substance. A young person of good constitution and vigorous appetite, if prevented from taking part in the active life of youth, is apt to become excessively fat. He should be tossed and tumbled on the play ground until the softness of his fat is squeezed out, and the laziness of his bones shaken off. His diet should consist mainly of stale bread, meat, hominy, or oatmeal and milk, and he must be kept on a small allowance of the habitual sugar and a still smaller one of the extra sweets, such as cakes and pastry. He should both go to bed and rise early, and be allowed to lie only on a hard mattress and under coverings warm enough, but not too heavy or close.

Girls have a greater tendency to become unduly fat than boys, for they get less chance of exercising their bodies, and if they desire to be healthy and strong, they are advised to get rid of it by eating less and exercising more.

The best muscular exercise for young children is the movement to which they are led by their natural playfulness. They, if left to themselves, will run, tumble, and toss and wrestle with each other like sportive kittens. Nothing can be more favorable for the just development of the muscular system, and, in fact, for vigorous growth and

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PREFACE.

It must always be a matter of opinion as to what is a "Familiar Quotation," and what is not; those here given, it is thought, come properly under the denomination, though doubtless many readers will miss phrases which they may think should have been included; it must, however, be borne in mind that the space at disposal is limited. Except in a few instances, "Proverbs" have been excluded as not coming within the scope of the book.

The alphabetical arrangement adopted will, it is hoped, render reference easy; the word which seemed the most prominent in the extract being used as the index word.

In most cases, the works of the authors cited have been referred to, to insure correctness both in diction and place, so that it is believed that accuracy in these features may be relied on.

The errors constantly made in quoting, by writers and speakers, are remarkable. Even so accomplished a scholar as Mr. Gladstone —*quandoque bonus dormitat Homerus*—errs; in a late published number of the *Nineteenth Century*, quoting Byron's words,

> "The bubbling cry
> Of some strong swimmer in his agony,"

he names them as occurring in "Childe Harold," instead of in "Don Juan," canto ii., stanza 53.

In some cases brief footnotes are given.

[The quotations from Shakespeare are generally in accordance with the readings adopted by Mr. Charles Knight.]

FAMILIAR QUOTATIONS.

ABDIEL. The seraph Abdiel, faithful found,
Among the faithless faithful only he.
MILTON. Par. Lost, bk. v. l. 897-8.

ABRIDGMENT. An abridgment of all that was pleasant in man.
GOLDSMITH. Retaliation, l. 94.

ABUNDANCE OF THE HEART. For out of the abundance of the heart the mouth speaketh. St. Matthew, chap. xii. v. 34.

ACTION. Suit the action to the word, the word to the action, with this special observance that you o'erstep not the modesty of nature. SHAKESPEARE. Hamlet, act iii. sc. 2.

ACTIONS. Only the actions of the just
Smell sweet and blossom in the dust.
SHIRLEY. Death's Final Conquest.

ADORN. He touched nothing that he did not adorn.
JOHNSON. Epitaph on Goldsmith.

ADVERSITY. Sweet are the uses of adversity;
Which, like the toad, ugly and venomous,
Wears yet a precious jewel in his head.
SHAKESPEARE. As You Like It, act ii. sc. 1.

AFFLICTION. For our light affliction, which is but for a moment, worketh for us a far more exceeding and eternal weight of glory. 2 Corinthians, chap. iv. v. 17.

AGE. Age cannot wither her, nor custom stale
The infinite variety of women.

AGE. Crabbed age and youth cannot live together.
SHAKESPEARE. Passionate Pilgrim, st. 10.

AGE. He was not of an age, but for all time.
BEN JONSON. Lines on Shakespeare.

ALL THINGS. I am made all things to all men, that I might by all means save some. 1 Corinthians, chap. ix. v. 22.

ike angel-visits, few and far between.
CAMPBELL. Pleasures of Hope, pt. ii. l. 376.

ANGEL-VISITS.

tful to entertain strangers: for thereby some
ngels unawares.
Hebrews, chap. xiii. v. 2.

ANGELS. Be not forg
have entertained

eth away wrath; but grievous words
Proverbs, chap. xv. v. 1.

ANSWER. A soft answer tur
stir up anger.

ver fallen!
ON. Par. Lost, bk. i. l. 330.

ARISE. Awake, arise, or be for

MILT s of art.

ue to Addison's Cato.
POPE. Pr olo

ART. To wake the soul by tender str

RAY. Elegy.

ASHES. Even in our ashes live their w fire

ASS. By outward show let's not be cheated;
An ass should like an ass be treated.
GAY. Fables, Pack Horse and Ca rier.

ASSURANCE. I'll make assurance doubly sure,
And take a bond of fate.
SHAKESPEARE. Macbeth, act iv. sc. 1.

ASTRONOMER. An undevout astronomer is mad.
YOUNG. Night Thoughts, Night ix. l. 773.

ATHEIST. By night an atheist half believes a God.
YOUNG. Night Thoughts, Night v. l. 176.

AUTHORITY. Man, proud man!
Dress'd in a little brief authority;
Most ignorant of what he's most assur'd,—
His glassy essence,—like an angry ape
Plays such fantastic tricks before high heaven,
As make the angels weep.
SHAKESPEARE. Measure for Measure, act ii. sc. 2.

AVARICE. So for a good old-gentlemanly vice
I think I must take up with avarice.
BYRON. Don Juan, canto i. st. 216.

AYR. Auld Ayr, wham ne'er a town surpasses,
For honest men and bonnie lasses.
BURNS. Tam O'Shanter.

BALANCES, WEIGHED IN. Thou art weighed in the balances, and art found wanting. Daniel, chap. v. v. 27.

BANNERS. Hang out our banners on the outward walls;
The cry is still "They come."
SHAKESPEARE. Macbeth, act v. sc. 5.

BATTLES. Fought all his battles o'er again;
And thrice he routed all his foes; and thrice he slew the slain. DRYDEN, Alexander's Feast.

BEAST. A righteous man regardeth the life of his beast.
Proverbs, chap. xii. v. 10.

BEAUTY. A thing of beauty is a joy for ever.
KEATS. Endymion, l. 1.

BEAUTY. Beauty draws us with a single hair.
POPE. Rape of the Lock, canto ii. l. 28.

BEAUTY. Beauty is only skin deep.

BELIAL, SONS OF. When night
Darkens the streets, then wander forth the sons of Belial.
MILTON. Par. Lost, l. 501-2.

BELL. The tocsin of the soul—the dinner bell.
BYRON. Don Juan, canto v. st. 49.

BELLS. Those evening bells, those evening bells!
How many a tale their music tells.
MOORE. National Airs.

BIRDS. Birds in their little nests agree;
And 'tis a shameful sight,
When children of one family
Fall out, and chide and fight.
WATTS. Divine Songs, song 17.

BLACKBERRIES. Give you a reason on compulsion!
If reasons were as plenty as blackberries I would give no man a reason upon compulsion.
SHAKESPEARE. Henry IV. Pt. I. act ii. sc. 4.

BLESSED TO GIVE. It is more blessed to give than to receive.
Acts, chap. xx. v. 35.

BLOOD. Whoso sheddeth man's blood, by man shall his blood be shed; for in the image of God made he man.
Genesis, chap. ix. v. 6.

BLOT. For his chaste muse employed her Heaven-taught lyre.
None but the noblest passions to inspire;
Not one immoral, one corrupted thought;
One line which, dying, he could wish to blot.
LORD LYTTLETON. Prologue to Thomson's Coriolanus.

BOOK. 'Tis pleasant, sure, to see one's name in print;
A book's a book although there's nothing in't.
BYRON. English Bards and Scotch Reviewers, l. 51-2.

BOOKS. Books in the running brooks,
Sermons in stones, and good in everything.
SHAKESPEARE. As You Like It, act ii. sc. 2.

BOOKS. Of making many books there is no end; and much study is a weariness of the flesh. Ecclesiastes, chap. xii. v. 12.

BOOKS. This books can do; nor this alone, they give
New views to life, and teach us how to live;
They soothe the grieved, the stubborn they chastise,
Fools they admonish, and confirm the wise.
CRABBE. The Library, l. 41-4.

BORROWER. Neither a borrower nor a lender be,
For loan oft loses both itself and friend.
SHAKESPEARE. Hamlet, act i. sc. 3.

BOURN. The dread of something after death;
The undiscovered country, from whose bourn
No traveler returns, puzzles the will,—
And makes us rather bear those ills we have,
Than fly to others that we know not of.
SHAKESPEARE. Hamlet, act iii. sc. 1.

BOY. Ah, happy years! once more, who would not be a boy!
BYRON. Childe Harold, canto ii. st. 23.

BRAINS. O that men should put an enemy in their mouths to steal away their brains. SHAKESPEARE. Othello, act ii. sc. 3.

BRAVE, THE. How sleep the brave, who sink to rest,
By all their country's wishes blest!
When Spring, with dewy fingers cold,
Returns to deck their hallowed mould,
She there shall dress a sweeter sod
Than Fancy's feet have ever trod.
COLLINS. Ode written in 1746.

BRAVE. None but the brave deserves the fair.
DRYDEN, Alexander's Feast.

BREAD. Cast thy bread upon the waters, for thou shalt find it after many days. Ecclesiastes, chap. xi. v. 1.

BRETHREN TO DWELL IN UNITY. Behold how good and how pleasant it is for brethren to dwell together in unity!
Psalm cxxxiii. v. 1.

BREVITY. Brevity is the soul of wit.
SHAKESPEARE. Hamlet, act ii. sc. 2.

BRITANNIA. Britannia needs no bulwark,
No towers along the steep;
Her march is o'er the mountain waves,
Her home is on the deep.
CAMPBELL. Ye Mariners of England.

BRITANNIA. Rule Britannia! rule the waves;
Britons never will be slaves.
THOMSON. Ode in the Masque of Alfred.

BROTHER. Affliction's sons are brothers in distress.
A brother to relieve, how exquisite the bliss!
BURNS. A Winter's Night.

BROTHER. Brother, brother, we are both in the wrong.
GAY. Beggars' Opera, act ii. sc. 2.

BURDEN. These last have wrought but one hour, and thou hast made them equal unto us, which have borne the burden and heat of the day. St. Matthew, chap. xx. v. 12.

CÆSAR. Imperial Cæsar, dead and turn'd to clay,
Might stop a hole to keep the wind away.
SHAKESPEARE. Hamlet, act v. sc. 1.

CÆSAR'S. Render therefore unto Cæsar the things which are Cæsar's; and unto God the things which are God's.
St. Matthew, chap. xxii. v. 21.

CAKE. Wouldst thou both eat thy cake and have it?
HERBERT. The Size.

CALUMNY. Be thou as chaste as ice,—as pure as snow,
Thou shalt not escape calumny.
SHAKESPEARE. Hamlet, act iii. sc. 1.

CAMEL. Ye blind guides, which strain at a gnat, and swallow a camel. St. Matthew, chap. xxiii. v. 24.

CANDLE. How far that little candle throws his beams!
So shines a good deed in a naughty world.
SHAKESPEARE. Merchant of Venice, act v. sc. 1.

CARCASE. For wheresoever the carcase is, there will the eagles be gathered together. St. Matthew, chap. xxiv. v. 28.

CARE. Care to our coffin adds a nail no doubt,
And every grin so merry draws one out.
PETER PINDAR (Dr. Walcot). Expostulatory Odes, ode 15.

CHAIR, VACANT. There is no flock, however watch'd and tended,
But one dead lamb is there;
There is no fireside, howsoe'er defended,
But has one vacant chair.
LONGFELLOW. Resignation.

CHARITY. And now abideth faith, hope, charity, these three; but the greatest of these is charity.
1 Corinthians, chap. xiii. v. 13.

CHASTENETH. For whom the Lord loveth he chasteneth, and scourgeth every son whom he receiveth.
Hebrews, chap. xii. v. 6.

CHEAT. Doubtless the pleasure is as great
Of being cheated, as to cheat.
BUTLER. Hudibras, pt. ii. canto iii. l. 1-2.

CHICKENS. To swallow gudgeons ere they're catch'd,
And count their chickens ere they're hatch'd.
BUTLER. Hudibras, pt. ii. canto iii. l. 923-4.

CHILD. A simple child,
That lightly draws its breath,
And feels its life in every limb,
What should it know of death?
WORDSWORTH. We are Seven.

CHILD. Behold the child, by Nature's kindly law,
Pleased with a rattle, tickled with a straw.
POPE. Essay on Man, ep. ii. l. 275-6.

CHILD. Of manners gentle, of affections mild,
In wit a man, simplicity a child.
POPE. Epitaph on Gay.

CHILD. Sharper than a serpent's tooth it is
To have a thankless child.
SHAKESPEARE. King Lear, act i. sc. 4.

CHILD. Spare the rod, and spoil the child.
BUTLER. Hudibras, pt. ii. canto i. l. 844.

CHILD. The child is father of the man.
WORDSWORTH. Poems referring to Childhood, No. 1.

CHILD. Train up a child in the way he should go, and when he is old he will not depart from it.
Proverbs, chap. xxii. v. 6.

CHILDHOOD. The childhood shows the man
As morning shows the day.
MILTON. Par. Regained, bk. iv. l. 221.

CHILDHOOD'S HOUR. Oh! ever thus, from childhood's hour,
I've seen my fondest hopes decay;
I never loved a tree or flower,
But 'twas the first to fade away.
MOORE. Lalla Rookh the Fire Worshipers, l. 277-80.

CHILDREN. As arrows are in the hand of a mighty man; so are children of the youth. Happy is the man that hath his quiver full of them. Psalm cxxvii. v. 4, 5.

CHILDREN. Thy wife shall be as a fruitful vine by the sides of thine house ; thy children like olive plants round about thy table. Psalm cxxviii. v. 3.

CHRIST. If in this life only we have hope in Christ, we are of all men most miserable. 1 Corinthians, chap. xv. v. 19.

CLEANLINESS is next to godliness.

CLOUD. There ariseth a little cloud out of the sea like a man's hand. 1 Kings, chap. xviii. v. 44.

COLOSSUS. Why, man, he doth bestride the narrow world
Like a Colossus.
SHAKESPEARE. Julius Cæsar, act i. sc. 2.

COMMUNICATIONS, EVIL. Be not deceived : evil communications corrupt good manners. 1 Corinthians, chap. xv. v. 33.

COMPARISONS. Comparisons are odious.
HERBERT. Jacula Prudentum.

CONCLUSION. O most lame and impotent conclusion.
SHAKESPEARE. Othello, act ii. sc. 1.

CONFUSION. Ruin upon ruin, rout on rout,
Confusion worse confounded.
MILTON. Par. Lost, bk. ii. l. 995-6.

CONSCIENCE. Thus conscience does make cowards of us all.
SHAKESPEARE. Hamlet, act iii. sc. 1.

CONSIDERATION. Consideration like an angel came,
And whipp'd the offending Adam out of him.
SHAKESPEARE. Henry V, act i. sc. 1.

CONVERSING. With thee conversing I forget all time.
MILTON. Par. Lost, bk. iv. l. 638.

COOKS. Heaven sends us good meat, but the devil sends cooks.
GARRICK. Epigram on Goldsmith's Retaliation.

CORD, THE SILVER. Or ever the silver cord be loosed, or the golden bowl be broken, or the pitcher be broken at the fountain, or the wheel broken at the cistern.
Ecclesiastes, chap. xii. v. 6.

CORN, EARS OF. Whoever could make two ears of corn, or two blades of grass, to grow upon a spot of ground where only one grew before, would deserve better of mankind, and do more essential service to his country, than the whole race of politicians put together.
SWIFT. Gulliver's Travels, pt. ii. chap. vii.

COUNSELLORS. In the multitude of counsellors there is safety.
Proverbs, chap. xi. v. 14.

COUNTRY. God made the country, and man made the town.
COWPER. The Task, bk. i.

COURAGE. Screw your courage to the sticking place.
SHAKESPEARE. Macbeth, act i. sc. 7.

COWARD. Where's the coward that would not dare
To fight for such a land?
SCOTT. Marmion, canto iv. st. 30.

COWARDS. Cowards die many times before their deaths,
The valiant never taste of death but once.
SHAKESPEARE. Julius Cæsar, act ii. sc. 2.

COWARDS. Cowards are cruel, but the brave
Love mercy and delight to save.
GAY. Fables. Dedication.

CREATOR. Remember now thy Creator in the days of thy youth, while the evil days come not. Ecclesiastes, chap. xii. v. 1.

CREATURES. Millions of spiritual creatures walk the earth
Unseen, both when we wake and when we sleep.
MILTON. Par. Lost, bk. iv. l. 677–8.

CRIME. It is worse than a crime, it is a blunder.

CRITICAL. I am nothing if not critical.
SHAKESPEARE. Othello, act ii. sc. 1.

CROWN. Uneasy lies the head that wears a crown.
SHAKESPEARE. Henry IV., Pt. II. act iii. sc. 1.

CUNNING. If I forget thee, O Jerusalem, let my right hand forget her cunning! Psalm cxxxvii. v. 5.

CUP. Life's enchanted cup but sparkles near the brim.
BYRON. Childe Harold, canto iii. st. 8.

CURFEW. The curfew tolls the knell of parting day,
The lowing herd winds slowly o'er the lea,
The ploughman homeward plods his weary way
And leaves the world to darkness and to me.
GRAY. Elegy.

CUT, UNKINDEST. This was the most unkindest cut of all.
SHAKESPEARE. Julius Cæsar, act iii. sc. 2.

DAGGERS. I will speak daggers to her, but use none.
SHAKESPEARE. Hamlet, act iii. sc. 2.

DAN. I pity the man who can travel from Dan to Beer-sheba, and cry, "'Tis all barren."
STERNE. Sentimental Journey. In the street: Calais.

DANIEL. A Daniel come to judgment! yea, a Daniel!
SHAKESPEARE. Merchant of Venice, act iv. sc. 1.

DARKNESS. No light, but rather darkness visible.
MILTON. Par. Lost, bk. i. l. 63.

DAY, CLOSE OF. At the close of the day when the hamlet is still,
And mortals the sweets of forgetfulness prove.
BEATTIE. The Hermit.

DAYS, TO NUMBER. So teach us to number our days that we may apply our hearts unto wisdom. Psalm xc. v. 12.

DEATH. All our yesterdays have lighted fools
The way to dusty death. Out, out, brief candle!
Life 's but a walking shadow—a poor player,
That struts and frets his hour upon the stage,
And then is heard no more; it is a tale
Told by an idiot, full of sound and fury,
Signifying nothing.
SHAKESPEARE. Macbeth, act v. sc. 5.

DEATH. Death grinn'd horrible a ghastly smile.
Par. Lost, bk. ii. l. 846.

DEATH. For within the hollow crown,
That rounds the mortal temples of a king,
Keeps death his court, and there the antic sits.
SHAKESPEARE. Richard II. act iii. sc. 2.

DEATH. How wonderful is Death,
Death and his brother Sleep!
One, pale as yonder waning moon
With lips of lurid blue,
The other rosy as the morn.
SHELLEY. Queen Mab, l. 1-5.

DEATH, SLEEP OF. Ay, there 's the rub;
For in that sleep of death what dreams may come,
When we have shuffled off this mortal coil,
Must give us pause.
SHAKESPEARE. Hamlet, act iii. sc. 1.

DEATH. The glories of our birth and state
Are shadows, not substantial things,
There is no armor against fate;
Death lays his icy hands on kings.
SHIRLEY. Death's Final Conquest.

DEATH. There is no death; what seems so is transition.
This life of mortal breath
Is but a suburb of the life elysian,
Whose portals we call death.
LONGFELLOW. Resignation.

DEATH. The rich, the poor, the great, the small,
Are level'd; death confounds them all.
GAY. Fables. Ravens and Sexton.

DEATH. The sense of death is most in apprehension;
And the poor beetle, that we tread upon,
In corporeal suffrance finds a pang as great
As when a giant dies.
SHAKESPEARE. Measure for Measure, act iii. sc. 1.

DEATH. The sting of death is sin; and the strength of sin is the law. 1 Corinthians, chap. xv. v. 56.

DEATH. Thrice welcome, death!
That after many a painful, bleeding step,
Conducts us to our home, and lands us safe
On the long-wished-for shore.
BLAIR. The Grave, l. 706-9.

DEATH'S SHAFTS. Death's shafts fly thick! here falls the village swain,
And there his pamper'd lord!
BLAIR. The Grave, l. 447-8.

DEBTS. He that dies pays all debts.
SHAKESPEARE. Tempest, act iii. sc. 2.

DEEP YET CLEAR. O, could I flow like thee, and make thy stream
My great example, as it is my theme!
Tho' deep, yet clear; tho' gentle, yet not dull;
Strong without rage, without o'erflowing full.
DENHAM. Cooper's Hill, l. 186-9.

DEGREES, FINE BY. Fine by degrees, and beautifully less.
PRIOR. Henry and Emma, l. 430.

DESCRIPTION. For her own person, it beggar'd all description.
SHAKESPEARE. Antony and Cleopatra, act ii, sc. 2.

DESPAIR. Shall I, wasting in despair.
Die because a woman 's fair?
WITHER. The Shepherd's Resolution.

DEVIL. He will give the Devil his due.
SHAKESPEARE. Henry IV. Pt. I. act, sc. 2.

DEVIL. He must needs go that the devil drives.
SHAKESPEARE. All 's well that ends well, act i. sc. 3.

DEVIL. He must have a long spoon that must eat with the devil.
SHAKESPEARE. Commedy of Errors, act. iv. sc. 3.

DEVIL. The devil can cite Scripture for his purpose.
SHAKESPEARE. Merchant of Venice, act i. sc. 3.

DEVIL. The devil hath power to assume a pleasing shape.
SHAKESPEARE. Hamlet, act ii. sc. 2.

DIGESTION. Good digestion wait on appetite,
And health on both.
SHAKESPEARE. Macbeth, act iii. sc. 4.

DISTANCE. 'Tis distance lends enchantment to the view.
CAMPBELL. Pleasures of Hope, pt. i. l. 7.

DIVINITY. There 's a Divinity that shapes our ends,
Rough-hew them how we will.
SHAKESPEARE. Hamlet, act v. sc. 2.

DIVINITY. 'Tis the Divinity that stirs within us.
'Tis Heaven itself that points out an hereafter,
And intimates eternity to man.
ADDISON. Cato, act v. sc. 1.

DOCTORS. Who shall decide when doctors disagree?
POPE. Moral Essays, ep. iii. l. 1-2.

DOG. A living dog is better than a dead lion.
Ecclesiastes, chap. ix. v. 4.

DOUBTS AND FEARS. But now I am cabin'd, cribb'd, confined,
To saucy doubts and fears. [bound in
SHAKESPEARE. Macbeth, act iii. sc. 4.

DRAMA. The drama's laws the drama's patrons give,
For we that live to please, must please to live.
JOHNSON.

DREAM. There 's nothing half so sweet in life
As love's young dream.
MOORE. Irish Melodies. Love's Young Dream.

DRINK TO ME ONLY. Drink to me only with thine eyes,
And I will pledge with mine.
BEN JONSON. To Celia.

DRUM. Pulpit, drum ecclesiastic,
Was beat with fist instead of a stick.
BUTLER. Hudibras, pt. i. canto i. l. 11-12.

DUST. Then shall the dust return to the earth as it was; and the spirit shall return unto God who gave it.
Ecclesiastes, chap. xii. v. 7.

DUST. To the vile dust from whence he sprung,
Unwept, unhonored, and unsung.
SCOTT. Lay of the Last Minstrel, canto vi. st. 1.

DYING. We thought her dying when she slept,
And sleeping when she died. HOOD. The Deathbed.

EAR. Where more is meant than meets the ear.
MILTON. Il Penseroso.

EARTH. The earth is the Lord's, and the fulness thereof; the world, and they that dwell therein. Psalm xxiv. v. 1.

ELOQUENT. That old man eloquent.
MILTON. Sonnet to Lady Ley.

EMINENCE, BAD. Satan exalted sat, by merit raised
To that bad eminence.
MILTON. Par. Lost, bk. ii. l. 5–6.

ENGLAND. England, with all thy faults, I love thee still.
COWPER. The Task, bk. ii. l. 206.

EPITOME. A man so various that he seem'd to be
Not one, but all mankind's epitome. DRYDEN.

ERIN. Erin! an exile bequeaths thee his blessing!
Land of my forefathers! Erin go bragh!
Buried and cold, when my heart stills her motion,
Green be thy fields,—sweetest isle of the ocean!
And thy harp-striking bards sing aloud with devotion,
Erin mavourneen—Erin go bragh!
CAMPBELL. Exile of Erin.

ERR. Good nature and good sense must ever join;
To err is human, to forgive divine.
POPE. Essay on Criticism, pt. ii. l. 324–5.

ETHIOPIAN. Can the Ethiopian change his skin, or the leopard his spots? Jeremiah, chap. xiii. v. 23.

EVENING. Now came still evening on, and twilight grey
Had in her sober livery all things clad;
Silence accompanied.
MILTON. Par. Lost, bk. iv. l 598–9.

EVENTS, COMING. For, dark and despairing, my sight I may seal,
But man cannot cover what God would reveal;
'Tis the sunset of life gives me mystical lore,
And coming events cast their shadows before.
CAMPBELL. Lochiel's Warning.

EVIL. Evil is wrought by want of thought
As well as want of heart. HOOD. The Lady's Dream.

EVIL. The evil that men do lives after them,
The good is often interred with their bones;
So let it be with Cæsar.
SHAKESPEARE. Julius Cæsar, act iii. sc. 2.

EVILS. Of two evils, the less is always to be chosen. KEMPIS.

EXCELSIOR. The shades of night were falling fast,
As through an Alpine village passed
A youth, who bore, 'mid snow and ice,
A banner with the strange device: Excelsior.
LONGFELLOW. Excelsior.

EYE FOR EYE. And thine eye shall not pity; but life shall go for life, eye for eye, tooth for tooth, hand for hand, foot for foot. Deuteronomy, chap. xix. v. 21.

FABIUS. Let none object my lingering way,
I gain, like Fabius, by delay.
GAY. Fables. Court of Death.

FABRIC OF THIS VISION.
And, like the baseless fabric of this vision,
The cloud-capp'd towers, the gorgeous palaces,
The solemn temples, the great globe itself,
Yea, all which it inherit, shall dissolve,
And, like this insubstantial pageant faded,
Leave not a rack behind.
SHAKESPEARE. Tempest, act iv. sc. 1.

FAILINGS. And e'en his failings lean'd to virtue's side.
GOLDSMITH. Deserted Village, l. 164.

FAITH. For modes of faith let graceless zealots fight;
His can't be wrong whose life is in the right.
POPE. Essay on Man, ep. iii. l. 305-6.

FALSEHOOD. Had I a heart for falsehood framed,
I ne'er could injure you;
For though your tongue no promise claim'd,
Your charms would make me true.
SHERIDAN. Duenna, act i. sc. 5.

FASHION. The glass of fashion, and the mould of form,
The observ'd of all observers.
SHAKESPEARE. Hamlet, act iii. sc. 1.

FATE. To bear is to conquer our fate. CAMPBELL.

FATHER, A WISE. It is a wise father that knows his own child.
SHAKESPEARE. Merchant of Venice, act ii. sc. 2.

FATHER OF ALL. Father of all! in every age,
In every clime adored
By saint, by savage, and by sage,
Jehovah, Jove, or Lord.
POPE. The Universal Prayer.

FAULTS. In other men we faults can spy,
And blame the mote that dims their eye,
Each little speck and blemish find;
To our own stronger errors blind.
GAY. Fables. Turkey and Ant.

FAULTS. They say best men are moulded out of faults.
SHAKESPEARE.

FELLOW-FEELING. A fellow-feeling makes one wondrous kind.
GARRICK. Prologue on leaving the Stage.

FIGHTS, HE THAT. He that fights and runs away
May turn and fight another day;
But he that is in battle slain
Will never rise to fight again.

FIRE, COALS OF. If thine enemy hunger, feed him; if he thirst, give him drink; for in so doing thou shalt heap coals of fire on his head. Romans, chap. xii. v. 20.

FIREBRAND. Ye were as a firebrand plucked out of the burning.
Amos, chap. iv. v. 11.

FIRSTBORN. Sweet to the father is his firstborn's birth. BYRON.

FLOWERS. Flowers of all hue, and without thorn the rose.
MILTON. Par. Lost, bk. iv. l. 256.

FOOL. Answer a fool according to his folly.
Proverbs, chap. xxvi. v. 5.

FOOLS. Fools rush in where angels fear to tread.
POPE. Essay on Criticism, pt. iii. l. 66.

FOOTPRINTS. Lives of great men all remind us
We can make our lives sublime,
And, departing, leave behind us
Footprints on the sands of time.
LONGFELLOW. A Psalm of Life.

FREEDOM. Freedom shriek'd as Kosciusko fell.
CAMPBELL. Pleasures of Hope, pt. i. l. 382.

FRIEND. Green be the turf above thee,
Friend of my better days;
None knew thee but to love thee,
None named thee but to praise. HALLECK.

FRIEND, CANDID. Save, save, oh! save me from the candid friend.
POETRY OF THE ANTIJACOBIN.

FRIENDS, CHOICE OF. On the choice of friends
Our good or evil name dependi.
GAY. Fables. Woman and Cats.

FRIENDSHIP. Friendship! mysterious cement of the soul!
Sweetener of life and solder of society,
I owe thee much.
BLAIR. The Grave, l. 88–90.

FRIENDSHIP. Who friendship with a knave hath made,
Is judged a partner in the trade.
GAY. Fables. Old Woman and Cats.

GEM. Full many a gem of purest ray serene,
The dark unfathom'd caves of ocean bear;
Full many a flower is born to blush unseen,
And waste its sweetness on the desert air.
GRAY. Elegy.

GIANT'S STRENGTH. O, it is excellent
To have a giant's strength; but it is tyrannous
To use it like a giant.
SHAKESPEARE. Measure for Measure, act ii. sc. 2.

GIFT, EVERY GOOD. Every good gift and every perfect gift is from above, and cometh down from the Father of lights, with whom is no variableness, neither shadow of turning.
James, chap. i. v. 17.

GIFT-HORSE. He ne'er consider'd it as loth,
To look a gift-horse in the mouth. BUTLER.

GILEAD. Is there no balm in Gilead? is there no physician there?
Jeremiah, chap. viii. v. 22.

GIRDLE. I'll put a girdle round about the earth
In forty minutes. SHAKESPEARE.

GIVER, A CHEERFUL. God loveth a cheerful giver.
2 Corinthians, chap. ix. v. 7.

GLOVE. See, how she leans her cheek upon her hand!
O, that I were a glove upon that hand,
That I might touch that cheek.
SHAKESPEARE. Romeo and Juliet.

GOD AND MAMMON. Ye cannot serve God and Mammon.
St. Matthew, chap. vi. v. 24.

GOD. Fear God, and keep his commandments; for this is the whole duty of man. Ecclesiastes, chap. xii. v. 13.

GOD. For God is love. 1 John, chap. iv. v. 8 and 16.

GOD. For God shall bring every work into judgment, with every secret thing, whether it be good, or whether it be evil.
Ecclesiastes, chap. xii. v. 14.

GOD. Man proposeth, God disposeth. HERBERT.

GOD, WHAT HE HATH JOINED. What therefore God hath joined together, let no man put asunder.
St. Matthew, chap. xix. v. 6

GOLD. All that glitters is not gold,
Often have you heard that told.
SHAKESPEARE. Merchant of Venice.

GOLD. To gild refined gold, to paint the lily,
To throw a perfume on the violet.
SHAKESPEARE. King John, act iv. sc. 2.

GOOD NAME.
Who steals my purse steals trash; 'tis something, nothing;
'Twas mine, 'tis his, and has been slave to thousands;
But he that filches from me my good name,
Robs me of that which not enriches him,
And makes me poor indeed.
SHAKESPEARE. Othello, act. iii. sc. 3.

GOOD NIGHT. To all, to each, a fair good night,
And pleasing dreams, and slumbers light.
SCOTT.

GRACE. Grace was in all her steps, heaven in her eye,
In every gesture dignity and love. MILTON.

GRAY HAIRS. Then shall ye bring down my gray hairs with sorrow to the grave. Genesis, chap. xlii. v. 38.

GREATNESS. Some are born great, some achieve greatness, and some have greatness thrust upon them. SHAKESPEARE.

GREEKS. When Greeks join'd Greeks, then was the tug of war.
LEE.

GROVES. The groves were God's first temples. BRYANT.

GUEST. Welcome the coming, speed the going guest. POPE.

HANDSOME. For handsome is that handsome does.
GOLDSMITH. Vicar of Wakefield, ch. i.

HARNESS. Blow wind! come wrack!
At least we'll die with harness on our back.
SHAKESPEARE.

HAVOCK. Cry "Havock," and let slip the dogs of war.
SHAKESPEARE. Julius Cæsar, act iii. sc. 1.

HEADS. At whose sight all the stars
Hide their diminish'd heads. MILTON.

HEART OF A MAN. If the heart of a man is depress'd with cares,
The mist is dispelled when a woman appears.
GAY. Beggars' Opera, act ii. sc. 1.

HEAVEN BELOW. I have been there, and still would go,
'Tis like a little heaven below. WATTS.

HELL. Better to reign in hell than serve in heaven.
MILTON. Par. Lost, bk. i. l. 263.

HELL. Hell is full of good meanings and wishings.
HERBERT. Jacula Prudentum.

HERBS. Better is a dinner of herbs where love is, than a stalled ox and hatred therewith. Proverbs, chap. xv. v. 17.

HEROD. I would have such a fellow whipped, for
o'erdoing Termagant,
It out-herods Herod. SHAKESPEARE.

HINDMOST. And bid the devil take the hindmost.
BUTLER. Hudibras, pt. i. canto ii. l. 633.

HIT. A hit, a very palpable hit.
SHAKESPEARE. Hamlet, act v. sc. 2.

HOME. 'Mid pleasures and palaces though we may roam,
Be it ever so humble there's no place like home.
J. H. PAYNE.

HONESTY. Would you true happiness attain,
Let honesty your passions rein. GAY.

HONEY. A land flowing with milk and honey.
Exodus, chap. iii. v. 8.

HONOR. All is lost except honor.

HOPE. Hope deferred maketh the heart sick.
Proverbs, chap. xiii. v. 12.

HOPE. Hope springs eternal in the human breast;
Man never is, but always to be, blest.
POPE. Essay on Man, ep. i. l. 95-6.

HOPE. White-handed Hope, thou hovering angel,
Gilt with golden wings. SHAKESPEARE.

HOST. Reckon without his host.

HOUSE. Set thine house in order; for thou shalt die, and not live.
Isaiah, chap. xxxviii. v. 1.

HOUSE DIVIDED. And if a house be divided against itself, that house cannot stand. St. Mark, chap. iii. v. 24, 25.

HOUSEHOLD WORDS. Then shall our names,
Familiar in their mouths as household words.
SHAKESPEARE. Henry V. act iv. sc. 3.

IDEA, YOUNG. Delightful task! to rear the tender thought,
To teach the young idea how to shoot.
THOMSON. The Seasons. Spring, l. 1152-3.

IMPEACHMENT. I own the soft impeachment, pardon my blushes.
SHERIDAN. Rivals, act v. sc. 3.

IMMORTAL NAMES. One of the few, the immortal names,
That were not born to die.
HALLECK.

INDEPENDENT. The glorious privilege
Of being independent.
BURNS. Epistle to a Young Friend.

INHUMANITY. Man's inhumanity to man
Makes countless thousands mourn.
BURNS. Man was made to Mourn.

INN. The world's an inn, and death the journey's end.
DRYDEN. Palamon and Arcite.

IRON. The iron entered into his soul.
COMMON PRAYER-BOOK, Psalm cv. v. 18.

JEALOUSY. O, beware, my lord, of jealousy;
It is the green-eyed monster. SHAKESPEARE.

JEHU. The driving is like the driving of Jehu the son of Nimshi; for he driveth furiously. 2 Kings, chap. ix. v. 20.

JESTER. How ill white hairs become a fool and jester!
SHAKESPEARE. Henry IV. Pt. II. act v. sc. 5.

JUDGE NOT. Judge not that ye be not judged. For with what judgment ye judge, ye shall be judged. St. Matthew.

KEEPER. Am I my brother's keeper? Genesis, chap. iv. v. 9.

KING. Ay, every inch a king.
SHAKESPEARE. King Lear, act iv. sc. 6.

LABOR. The labor we delight in physics pain.
SHAKESPEARE. Macbeth, act ii. sc. 3.

LABOR, LEARN TO. Let us then be up and doing
With a heart for any fate;
Still achieving, still pursuing,
Learn to labor and to wait.
LONGFELLOW. A Psalm of Life.

LABORER. The laborer is worthy of his hire.
St. Luke, chap. x. v. 7.

LAND, NATIVE. Breathes there the man with soul so dead,
Who never to himself hath said,
This is my own, my native land?
SCOTT. Lay of Last Minstrel, canto vi. st. 1.

LAND, NATIVE. Strike, for your altars and your fires;
Strike, for the green graves of your sires;
God, and your native land. HALLECK.

LAST SHALL BE FIRST. So the last shall be first, and the first last; for many be called, but few chosen. St. Matthew.

LAUGHTER. Sport that wrinkled care derides,
And laughter holding both his sides.
MILTON. L'Allegro, l. 31-4.

LEAP. Look before you ere you leap,
For as you sow, y'are like to reap.
BUTLER. Hudibras, pt. ii. canto 2.

LEARNING. A little learning is a dangerous thing;
Drink deep, or taste not the Pierian spring.
POPE. Essay on Criticism, pt. ii. l. 15-16.

LIBERTY. Liberty and Union, now and forever, one and inseparable. WEBSTER.

LIFE. Catch, then, O catch the transient hour;
Improve each moment as it flies;
Life's a short summer—man a flower—
He dies—alas! how soon he dies!—
JOHNSON. Winter, an Ode.

LIFE, A DREAM. Tell me not, in mournful numbers,
"Life is but an empty dream."
LONGFELLOW. A Psalm of Life.

LILIES OF THE FIELD. And why take ye thought for raiment? Consider the lilies of the field, how they grow; they toil not, neither do they spin; and yet I say unto you, that Solomon in all his glory was not arrayed like one of these.
St. Matthew, chap. vi. v. 28, 29.

LINE UPON LINE. Precept upon precept; line upon line, line upon line; here a little, and there a little. Isaiah.

LINES. The lines are fallen unto me in pleasant places; yea, I have a goodly heritage. Psalm xvi. v. 6.

LIVERY. He was a man
Who stole the livery of the court of Heaven
To serve the Devil in. POLLOK.

LORD, THE FEAR OF. The fear of the Lord is the beginning of knowledge; but fools despise wisdom and instruction.
Proverbs, chap. i. v. 7.

LOVE. 'Tis better to have loved and lost,
Than never to have loved at all. TENNYSON.

LOVE. Love is strong as death; jealousy is cruel as the grave.
Solomon's Song, chap. viii. v. 6.

LOVE. Many waters cannot quench love, neither can the floods drown it. Solomon's Song, chap. viii. v. 7.

LOVE. She never told her love:
But let concealment, like a worm i' the bud,
Feed on her damask cheek; she pin'd in thought;
And, with a green and yellow melancholy,
She sat like patience on a monument,
Smiling at grief. SHAKESPEARE.

LOVE. The rose is fairest when 'tis budding new,
And hope is brightest when it dawns from fears.
The rose is sweetest washed with morning dew,
And love is loveliest when embalm'd in tears.
SCOTT. Lady of the Lake, canto iv. first lines.

LOVE. There's nothing half so sweet in life
As love's young dream.
MOORE. Irish Melodies. Love's Young Dream.

LOVELINESS. Loveliness needs not the foreign aid of ornament,
But is, when unadorn'd, adorned the most.
THOMSON. The Seasons. Autumn, l. 204-6.

LYING. Lord, Lord, how the world is given to lying!
SHAKESPEARE. Henry IV. Pt. I. act v. sc. 4.

MADE. I am fearfully and wonderfully made.
Psalm cxxxix. v. 14.

MADNESS. Though this be madness, yet there's method in it.
SHAKESPEARE. Hamlet, act ii. sc. 2.

MEMORY DEAR. Though lost to sight, to memory dear.

MAN. He was a man, take him for all in all,
I shall not look upon his like again.
SHAKESPEARE. Hamlet, act i. sc. 2.

MAN. I am a man
More sinned against than sinning.
SHEAKSPEARE. King Lear, act iii. sc. 2.

MAN. Man wants but little; nor that little long.
YOUNG. Night Thoughts.

MAN. The proper study of mankind is man.
POPE. Essay on Man, ep. ii. l. 2.

MAN. What a piece of work is a man! how noble in reason! how infinite in faculty! in form and moving, how express and admirable! in action, how like an angel! in apprehension, how like a god! the beauty of the world! the paragon of animals! SHEAKSPEARE. Hamlet, act ii. sc. 2.

MAN. What's man in all his boast of sway?
Perhaps the tyrant of a day. GAY. Fables.

MAN BORN TO TROUBLE. Yet man is born unto trouble as the sparks fly upward. Job, chap. v. v. 7,

MAN, HONEST. An honest man's the noblest work of God.
BURNS. Cotter's Saturday night.

MARRIAGE-BELL. Soft eyes looked love to eyes which spake again,
And all went merry as a marriage-bell
BYRON. Childe Harold, canto iii. st. 21.

MEDES AND PERSIANS. According to the law of the Medes and Persians, which altereth not. Daniel, chap. vi. v. 8.

MEN. Be strong, and quit yourselves like men.
1 Samuel, chap. iv. v. 9.

MEN DECEIVERS. Sigh no more, ladies, sigh no more;
Men were deceivers ever.
SHAKESPEARE. Much Ado about Nothing.

MERCY. The quality of mercy is not strained;
It droppeth as the gentle rain from heaven
Upon the place beneath; it is twice bless'd;
It blesseth him that gives, and him that takes;
'Tis mightiest in the mightiest; it becomes
The throned monarch better than his crown.
SHAKESPEARE. Merchant of Venice, act iv. sc. 1.

MERITS. On their own merits modest men are dumb.
COLMAN the Younger.

MIDNIGHT. The iron tongue of midnight hath told twelve;
Lovers to bed. SHAKESPEARE.

MIGHTY, THE. How are the mighty fallen.
2 Samuel, chap. i. v. 19, 25, 27.

MIND. The mind shall banquet, though the body pine.
SHAKESPEARE. Love's Labors Lost.

MONEY. For the love of money is the root of all evil.
1 Timothy, chap. vi. v. 34.

MORROW, THE. Take therefore no thought for the morrow; for the morrow shall take thought for the things of itself. Sufficient unto the day is the evil thereof.
St. Matthew, chap. vi. v. 34.

MOVING. Three removes are as bad as a fire. FRANKLIN.

MUCH WHEN GIVEN. For unto whomsoever much is given, of him shall be much required. St. Luke, chap. xii. v. 48.

MURDER. Murder, though it have no tongue,
Will speak with most miraculous organ.
SHAKESPEARE. Hamlet, act ii. sc. 2.

MUSIC. Music has charms to soothe a savage breast.
CONGREVE. Mourning Bride, act i. sc. 1.

MUSIC. The man that hath no music in himself,
Nor is not mov'd with concord of sweet sounds,
Is fit for treasons, stratagems, and spoils.
SHAKESPEARE. Merchant of Venice.

NAME. What's in a name? that which we call a rose
By any other name would smell as sweet.
SHAKESPEARE. Romeo and Juliet, act ii. sc. 2.

NATURE. One touch of nature makes the whole world kin.
SHAKESPEARE. Troilus and Cressida.

NATURE. To him who in the love of nature holds
Communion with her visible forms,
She speaks a various language. BRYANT, Thanatopsis.

NATURE. Slave to no sect, who takes no private road,
But looks through nature up to nature's God.
POPE. Essay on Man, ep. iv. l. 31–4.

NATURE. To hold, as 'twere, the mirror up to nature.
SHAKESPEARE. Hamlet, act iii. sc. 2.

NECESSITY. Necessity, the tyrant's plea.
MILTON. Par. Lost, bk. iv. l. 394.

NETTLE. Out of this nettle, danger, we pluck this flower, safety.
SHAKESPEARE. Henry IV.

NIGHT COMETH. I must work the works of him that sent me, while it is day: the night cometh when no man can work.
St. John, chap. ix. v. 4.

NOTE OF. When found, make a note of.

OIL, MIDNIGHT. Whence is thy learning? hath thy toil
O'er books consumed the midnight oil?
GAY. Fables. Shepherd and Philosopher

OPINIONS. How long halt ye between two opinions ?
1 Kings, chap. xviii. v. 21.

ORDER OF GOING. At once, good night ;
Stand not upon the order of your going,
But go at once. SHAKESPEARE.

OYSTER. Why, then the world's mine oyster,
Which I with sword will open.
SHAKESPEARE. Merry Wives, act ii. sc. 2.

PEACE. Peace hath her victories
No less renowned than war.
MILTON. Sonnet to Cromwell.

PEACE. Her ways are ways of pleasantness, and all her paths are peace. Proverbs, chap. iii. v. 17.

PEACE. Peace, peace ; when there is no peace.
Jeremiah, chap. viii. v. 11.

PEARLS BEFORE SWINE. Give not that which is holy unto the dogs, neither cast ye your pearls before swine ; lest they trample them under their feet, and turn again and rend you.
St. Matthew, chap. vii. v. 6.

PEBBLES. As children gathering pebbles on the shore.
MILTON. Par. Regained, bk. iv. l. 330

PEN. My tougue is the pen of a ready writer.
Psalm xlv. v. 1.

PHYSIC. Throw physic to the dogs, I'll none of it.
SHAKESPEARE. Macbeth, act v. sc. 3.

PITCHERS. Little pitchers have wide ears.
HERBERT. Jacula, Prudentum.

PITY. He that hath pity upon the poor lendeth unto the Lord ; and that which he hath given will He pay him again.
Proverbs, chap. xix. v. 17.

PLOUGH. No man, having put his hand to the plough, and looking back, is fit for the kingdom of God.
St. Luke, chap. ix. v. 62.

POWER. O wad some power the giftie gie us
To see oursels as others see us. BURNS.

POVERTY AND RICHES. Give me neither poverty nor riches ; feed me with food convenient for me ; lest I be full and deny Thee, and say, Who is the Lord ? or lest I be poor and steal, and take the name of my God in vain.
Proverbs, chap. xxx. v. 8-9

PRAYER. More things are wrought by prayer than this world dreams of. TENNYSON. The Passing of Arthur, l. 391.

PRAYETH BEST. He prayeth best who loveth best
All things, both great and small. COLERIDGE.

PRIDE. Pride goeth before destruction, and a haughty spirit before a fall. Proverbs, chap. xvi. v. 18.

PRINCES. It is better to trust in the Lord than to put your confidence in princes. Psalm cxviii. v. 9.

PROCRASTINATION. Procrastination is the thief of time. YOUNG.

PROPHET. For Jesus himself testified, that a prophet hath no honor in his own country. St John, chap. iv. v. 44.

PROSE RUN MAD. It is not poetry, but prose run mad. POPE.

PRUNELLA. Worth makes the man, and want of it the fellow.
POPE. Essay on Man, ep. iv. l. 203-4.

PURE. Unto the pure all things are pure. Titus, chap. i. v. 15.

QUARREL. Thrice is he arm'd that hath his quarrel just.
SHAKESPEARE. Henry VI. Pt. II. act iii. sc. 2.

RACE. The race is not to the swift, nor the battle to the strong.
Ecclesiastes, chap. ix. v. 11.

RANK. For a' that and a' that,
Our toils obscure, an a' that;
The rank is but the guinea stamp,
The man's the gowd for a' that. BURNS.

REASON, FEAST OF. The feast of reason and the flow of soul.
POPE. Horace, Satire i. l. 128.

REED, A BRUISED. A bruised reed shall he not break, and the smoking flax shall he not quench. Isaiah, chap. xlii. v. 3.

REPUTATION. Seeking the bubble reputation
Even in the cannon's mouth. SHAKESPEARE.

REST. Come unto me, all ye that labor and are heavy laden, and I will give you rest. St. Matthew, chap. xi. v. 28.

REVENGE. Sweet is revenge, especially to women,
Pillage to soldiers, prize money to seamen.
BYRON. Don Juan, canto i. st. 124.

RIGHT. And spite of pride, in erring reason's spite,
One truth is clear, whatever is, is right.
POPE. Essay on Man, ep. i. last lines.

RIGHTEOUS, THE. I have been young, and now am old; yet have I not seen the righteous forsaken, nor his seed begging bread.
Psalm xxxvii. v. 25.

ROSE, THE LAST. 'Tis the last rose of summer left blooming alone.
MOORE. Irish Melodies.

RUIN. Majestic though in ruin. MILTON.

SABBATH. And He said unto them, the Sabbath was made for man, and not man for the Sabbath.
St. Mark, chap. ii. v. 27.

SATAN. For Satan himself is transformed into an angel of light.
2 Corinthians, chap. xi. v. 14.

SCHEMES. The best laid schemes o' mice and men
Gang aft agley. BURNS. Lines to a Mouse.

SCHOOL-BOY. The whining school-boy, with his satchel
And shining morning face, creeping like snail,
Unwillingly to school. SHAKESPEARE.

SCRIPTURES. Search the Scriptures: for in them ye think ye have eternal life. St. John, chap. v. v. 39.

SEA, THEY THAT GO DOWN TO. They that go down to the sea in ships, that do business in great waters; these see the works of the Lord, and his wonders in the deep.
Psalm cvii. v. 23–24.

SHAKESPEARE. When learning's triumph o'er her barbarous foes
First reared the stage, immortal Shakespeare rose,
Each change of many-colored life he drew,
Exhausted worlds and then imagined new;
Existence saw him spurn her bounded reign,
And panting time toiled after him in vain.
JOHNSON.

SHAME. O Shame! where is thy blush? SHAKESPEARE.

SHAMROCK. Oh the shamrock, the green, immortal shamrock,
Chosen leaf of bard and chief,
Old Erin's native shamrock. MOORE.

SHIELD. While mine is truth's impenetrable shield. WARTON.

SIGH. Excuse the blush, and pour out all the heart;
Speed the soft intercourse from soul to soul. POPE.

SLANDER. Slander whose edge is sharper than the sword.
SHAKESPEARE. Cymbeline, act iii. sc. 4.

SLEEP. Blessings light on him who first invented sleep.
CERVANTES. Don Quixote, pt. ii. chap. lxviii.

SLEEP. Sleep the sleep that knows not breaking,
Morn of toil nor night of waking. SCOTT.

SLEEP. Tired Nature's sweet restorer, balmy sleep. YOUNG.

SNAKE. We have scotch'd the snake, not killed it.
SHAKESPEARE. Macbeth, act iii. sc. 2.

SON. Marry your son when you will; your daughter when you can. HERBERT. Jacula Prudentum.

SORROWS. When sorrows come, they come not single spies,
But in battalions. SHAKESPEARE.

SOUL. He has kept
The whiteness of his soul, and thus
Men o'er him wept. BYRON.

SOUL. For what shall it profit a man, if he shall gain the whole world, and lose his own soul?
St. Mark, chap. viii. v. 36-7.

SOWETH, HE THAT. He which soweth sparingly shall reap also sparingly. 2 Corinthians, chap. ix. v. 6.

STANDETH, LET HIM THAT. Wherefore let him that thinketh he standeth take heed lest he fall.
1 Corinthians, chap. x. v. 12.

STONE. He that is without sin among you, let him first cast a stone at her. St. John, chap. viii. v. 7.

STONES. Continual dropping wears away stones. FRANKLIN.

SUCCESS. 'Tis not in mortals to command success,
But we'll do more, Sempronius; we'll deserve it.
ADDISON. Cato, act i. sc. 2.

SUN. There is no new thing under the sun.
Ecclesiastes, chap. i. v. 9.

SWEAT. In the sweat of thy face shalt thou eat bread, till thou return unto the ground. Genesis, chap. iii. v. 19.

SWEETNESS. Linked sweetness long drawn out. MILTON.

TALE. An honest tale speeds best, being plainly told.
SHAKESPEARE. Richard III, act iv. sc. 4.

TALE. Thereby hangs a tale. SHAKESPEARE.

TEAR. So bright the tear in beauty's eye,
Love half regrets to kiss it dry. BYRON.

TEAR. A tear so limpid and so meek,
It would not stain an angel's cheek,
'Tis that which pious fathers shed
Upon a duteous daughter's head. SCOTT.

TEARS. They that sow in tears shall reap in joy.
Psalm cxxvi. v. 5.

TEMPER. Oh blessed with temper, whose unclouded ray
Can make to-morrow cheerful as to-day;
She who can love a sister's charms, or hear
Sighs for a daughter with unwounded ear;
She who ne'er answers till a husband cools,
Or if she rules him never shows she rules.
Charms by accepting, by submitting sways,
Yet has her humor most when she obeys. POPE.

TEMPLE. No sooner is a temple built to God but the devil builds a chapel hard by. HERBERT. Jacula Prudentum.

THIEF. Suspicion always haunts the guilty mind;
The thief doth fear each bush an officer. SHAKESPEARE.

THINGS WHICH ARE SEEN. The things which are seen are temporal; but the things which are not seen are eternal.
2 Corinthians, chap. iv. v. 18.

THOUGHT. Thy wish was father, Harry, to that thought.
SHAKESPEARE. Henry IV. Pt. II. act iv. sc. 4.

THOUGHTS. Thoughts that breathe, and words that burn. GRAY.

THOUGHTS. Guard well thy thought; our thoughts are heard in heaven. YOUNG. Night Thoughts. Night ii. l. 95.

TIDE. There is a tide in the affairs of men,
Which, taken at the flood, leads on to fortune.
SHAKESPEARE. Julius Cæsar, act iv. sc. 3.

TIME. The whirligig of time brings in his revenges.
SHAKESPEARE. Twelfth Night, act v. sc. 1.

TIME. Dost thou love life, then do not squander time, for that is the stuff life is made of. FRANKLIN.

TO-MORROW. Boast not thyself of to-morrow; for thou knowest not what a day may bring forth. Proverbs, chap. xxvii. v. 1.

TRADE. In every age and clime we see,
Two of a trade can ne'er agree. GAY.

TRUE LOVE. The course of true love never did run smooth.
SHAKESPEARE. Midsummer Night's Dream, act i. sc. 1.

TRUTH. Truth is always strange—stranger than fiction.
BYRON. Don Juan, canto xiv. st. 101.

TRUTH. O, while you live, tell truth, and shame the devil.
SHAKESPEARE. Henry IV. Pt. I. act iii. sc. 1.

TRUTH. How sweet the words of truth breathed from the lips of love. BEATTIE. The Minstrel, bk. ii. st. 53.

TWICE-TOLD TALE. Life is as tedious as a twice-told tale.
SHAKESPEARE. King John, act iii. sc. 4.

TWIG. Just as the twig is bent the tree's inclined. POPE.

UNCTION. Lay not that flattering unction to your soul.
SHAKESPEARE. Hamlet, act iii. sc 4.

VALOR. The better part of valor is discretion. SHAKESPEARE.

VASE. You may break, you may shatter, the vase if you will,
But the scent of the roses will hang round it still.
MOORE.

VENGEANCE. Vengeance is mine; I will repay, saith the Lord.
Romans, chap. xii. v. 19.

VIRTUE. Each man makes his own statue, builds himself;
Virtue alone outbuilds the Pyramids.
YOUNG. Night Thoughts, Night vi. l. 311-2.

VIRTUE. Virtue alone is happiness below. POPE.

VIRTUE. 'Tis virtue makes the bliss, where'er we dwell.
COLLINS, Eclogue I.

VIRTUE. To make a virtue of necessity. DRYDEN.

VOICE. Her voice was ever soft,
Gentle and low; an excellent thing in woman.
SHAKESPEARE. King Lear, act v. sc. 3.

VOICE OF GRATITUDE. Sweet music's melting fall, but sweeter yet
The still small voice of gratitude.
GRAY. Ode for Music.

VOTE. The freeman casting with unpurchased hand,
The vote that shakes the turrets of the land. HOLMES.

WAGERS. Fools for arguments use wagers. BUTLER.

WALL. The weakest goes to the wall. SHAKESPEARE.

WATER. Smooth runs the water where the brook is deep.
SHAKESPEARE. Henry VI. Pt. II.

WATER. Unstable as water, thou shalt not excel.
Genesis, chap. xlix. v. 4.

WEB. O, what a tangled web we weave
When first we practice to deceive. SCOTT.

WHISTLED AS HE WENT.
And whistled as he went, for want of thought. DRYDEN.

WIFE AND HUSBAND. And little quarrels often prove
To be but new recruits of love.
BUTLER. Hudibras, pt. iii. canto i.

WILL. He that complies against his will.
Is of his own opinion still. BUTLER.

WISDOM. He that increaseth knowledge increaseth sorrow.
Ecclesiastes, chap. i. v. 18.

WOMAN. That man that hath a tongue, I say is no man
If with his tongue he cannot win a woman.
SHAKESPEARE. Two Gentlemen of Verona.

WOMAN. Earth's noblest thing, a perfect woman. LOWELL.

WOMAN. The man that lays his hand upon a woman,
Save in the way of kindness, is a wretch,
Whom 'twere gross flattery to name a coward.
TOBIN. Honeymoon, act ii. sc. 1.

WOMAN. The woman that deliberates is lost. ADDISON.

WORDS. Immodest words admit of no defence;
For want of decency is want of sense.
LORD ROSCOMMON. Essay on Translated Verse.

WORLD. All the world's a stage,
And all the men and women merely players.
SHAKESPEARE. As You Like It, act ii. sc. 7.

WORLD. All his prospects brightening to the last,
His heaven commences ere the world be past.
GOLDSMITH. Deserted Village, l. 111–2.

WRATH. Let not the sun go down upon your wrath.
Ephesians, chap. iv. v. 26.

YOUNG. "Whom the gods love, die young," was said of yore.
BYRON. Don Juan, canto iv. st. 22.

YOUTH. Home-keeping youth have ever homely wits.
SHAKESPEARE.

NOTICE TO TICKET HOLDERS.

The Bureau prints weekly three thousand of "The Books for the People." When over that number of persons attend our entertainments, which is frequently the case, of course many fail to receive a book, *especially* if more than one book goes into a single family. Only a hint is necessary.

The management desires to express its admiration of the almost perfect decorum observed by the very attentive and quiet audiences, which have so generosly and heartily seconded the efforts in their behalf. We are pleased that the hands and not the feet are used in approving.

A new and most ingenious patent consists of an automatic grip, leather-lined and padded, which is attached to each seat in the theatre or public hall, the rows of grips being connected by wires. Just before the last scene, song or closing sentences the usher touches a spring, an electric current is broken along the wires at each seat, and the grip gently takes hold of the ankle of each spectator and holds him to his seat until the entertainment is actually closed. Then he is released and the audience departs. It is called "The Spectators' Assistant in Preventing the Most Senseless, Inconsiderate, and Ill-bred Public Nuisance of the Age." As yet the management have not ordered any of these diabolical machines.

FUTURE ENTERTAINMENTS.

March 4. Dr. A. A. Willits, Philadelphia.—Subject, "Sunshine, or the Secret of a Happy Life."

March 11. The original Jubilee Singers of Fisk University, Tenn. (This superb Concert will begin at 7:45.)

March 18. "Beneath the Himalayas, or Through India," (Illustrated) by Mr. Harry W. French, Boston.

March 25. Grand Concert—Central Musical Association.

April 1. John B. Gough, Esq. Subject, "Peculiar People."

On March 25th an organization will be effected, and an opportunity be given to subscribe for tickets (price $1.00, payable September 1st,) to next winter's course, which will be superior in every respect. On April 1st the financial statement will be made.

PROGRAMME OF MUSICAL PRELUDE.

Tennessean Singers.

PART FIRST.

1. Been Listening.
2. Meeting here To-night.
3. Old Sheep knows the Road.
4. Ride up in a Chariot.
5. Sherman's March through Georgia.

INTERMISSION OF THREE MINUTES.

PART SECOND.

1. Winter will soon be over.
2. Wait till I get on my Robe.
3. All dem Days dun gone.
4. Then We'll sing the New Songs.
5. Let it Wave, "The Old Slave's Prayer."

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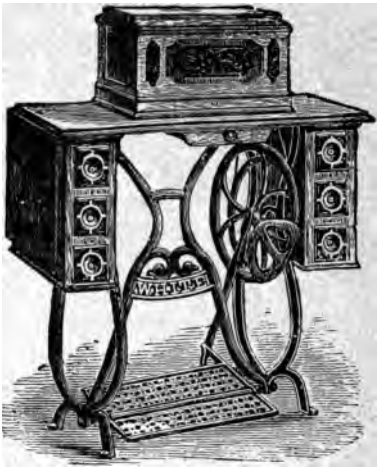

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(Signed)

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"AH! HAPPY YEARS! ONCE MORE WHO WOULD NOT BE A BOY?"
—*Byron.*

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CLEVELAND, OHIO.
1882.

THE JUBILEE SINGERS.

Songs from the sunny South land,
  Songs from over the sea,
Songs from the house of bondage,
  Songs of the glad and free,
They sang, those children of sorrow,
  Those children of dusky hue;
Strange and wild were their accents,
  But their hearts were warm and true.

Aloud they sang in triumph;
  They sang of the Jubilee,
When broken is every fetter,
  And the sons of men go free,
In the age of peace so golden,
  That the prophets have seen so plain,
When men shall be friends and brothers,
  And Christ himself shall reign.

O Africa, land of shadow,
  O Africa, land of song,
Land of long night's oppression,
  Land of shadow and wrong,
Thy echoes return unto thee,
  Bearing on golden wing
The tidings of earth's salvation,
  The song that the angels sing.

O Songsters of liquid sweetness,
  Songsters of beauteous lay,
Sing on of the glad hereafter,
  Sing of the blessed to-day;
Sing to the listening nations
  The song so new and old,
Till the echoes are caught by the angels
  In the city whose streets are gold.

Prof. A. K. SPENCE, *of Fisk University.*

"It has been said that he who writes the songs of a people is greater than he who makes their laws. After hearing the singing of the Jubilee Singers, I am persuaded that the spirit of their songs will end in the final triumph of liberty to all Americans."—*Written in the Singers' Album by President* JAMES A. GARFIELD.

THE EDUCATION OF THE NEGRO.

BY HON. ALBION W. TOURGEE, LL.D.

[*From the Congregationalist.*]

Considered with reference to the past, all there is to be said upon this subject is embraced in the single statement that it shows results to-day, which, taking into account the actual *status* of the race at the time of emancipation, and the paucity of the means by which these results have been attained, are quite unparalleled in the history of civilization.

THE STARTING POINT.

Sixteen years is a very brief period in which to look for any perceptible impression to be made on a Gibraltar of absolute ignorance. In seeking to estimate what has been done, we should never forget that the negro of America is less than three centuries removed from the most degraded barbarism upon earth, and that until the close of the last war he was expressly prohibited from acquiring knowledge, except so much as he might absorb through the pores of his intellectual being. The slave had neither time nor opportunity for self-improvement, nor rational incentive to exertion in that direction. His eyes were blinded and his ears waxed up by statute. A padlock was put upon his tongue, and a spy upon his footsteps. He was allowed to attend no public meeting without leave, and three of his race could not lawfully assemble, unless a white man was present. The fountain of knowledge was hedged about with every possible difficulty and danger to prevent his near approach. Whoever taught him a letter of the alphabet was guilty of a misdemeanor; whoever gave him a book to read committed a felony; while he who encouraged him to think for himself and about himself, did so at the peril of his life! For two hundred and fifty years the whole force of American intelligence was exerted to prevent the American negro from learning to read, to write, to think, or to act. Civilization did its utmost to prevent the extinction of barbarism, and circumscribe the area of enlightenment. The freedman of 1865 was only the negro of the Congo coast, *plus* what he had gained by simple exposure to our civilization, under a system of the strictest quarantine, designed expressly to prevent such infection. Perhaps one in a thousand could read—a very little; certainly not more than that proportion.

THE OUTLOOK.

The circumstances by which they were surrounded. even after emancipation, are also very often forgotten. In 1865 there were four and a half millions who were slaves one day and free the next. Save the clothes they wore, they had almost nothing of earthly possessions; and even these they kept by suffrance. A few had blankets or some sort of bedding, which the late masters allowed them to keep; they were not many, however. Not one of them had a house, a horse, a plow, or any mechanic tools; a book, a lamp, or any of the machinery either of self-support or of self-improvement. The earthly possessions of the whole four millions were not worth that many dollars. If they had all died in 1865, they could not have been buried without trespassing upon lands held in fee by the Caucasian.

It is often forgotten, too, that they were inapt, despised, distrusted, and unused even to the economic and social relations of civilized life. They had been forbidden by law to trade, and knew nothing of bargain and sale, contract or penalty. Even after they were free, the law for a time denied them this privilege. For three years, the States in which they dwelt refused to hear them as witnesses against a white man. There was no marriage for the slave, and among all this concourse there was not a legitimate father or mother, husband or wife. No freedman had a son or daughter whom he might claim, and no child had a father to whom it might appeal for aid or protection. There was no college, church nor school where they might enter as of right. The bulk of the people among whom they dwelt looked upon them with suspicion. Very few believed them capable of development or self-support. Very many doubted their humanity. Almost all expected only evil from the change. A large proportion regarded them with positive hate, as the indirect causes of their own recent misfortunes. None believed in their success; few wished for it. The late masters were as little used to freedom as the recent slaves. Thinking himself wronged by their liberation, the master was naturally inclined to right himself by the readiest means. To defraud the freedman of his hire, was only a short method of obtaining what, by his logic, had been unjustly taken from him. All the intelligence by which he was surrounded regarded every effort of the negro, looking to his own elevation, with distrust and discouragement. This was the send-off.

THE INTRUMENTALITIES.

It was in the face of these things that the education of the negroes began. The influences that made in their favor were all extraneous. But few of the States, in which they constituted an element worthy of serious consideration, had ever had a system of public instruction even for the whites. Such as there had been in the others was shattered by war, and indeed was so beggarly and insufficient in its character that it needed to be made over entirely, rather than to be amended in certain particulars

There were four elements of aid and encouragement that need to be considered. They were:

(1) The Freedmen's Bureau, which continued indirectly to aid in the support of schools for four years after the war, in a few of the principal cities and towns of the South.

(2) The public school systems of the various States, which were first put in operation in 1869 and 1870, by means of the taxation of the previous year. All the machinery of the system was to be built up. There was no nucleus, or none worth mentioning. There were no school houses that could be used for the instruction of colored pupils, save the few that Northern charity had built and dedicated to their use. There were few who would take any interest in their development. There was little money, and that little was not always honestly expended. Teachers were few, and those who would labor for the meager prices that could be paid were not always worthy of that poor hire. Political disturbances often interfered with the continuity of the schools. In some States they were for several years entirely abandoned. In no State were they sufficient to accommodate all who clamored for instruction. Not in a single one, it is believed, have they been kept open five years in succession for three months in each year.

(3) The third source of aid has been the private benevolence of the North. Individuals, societies and churches have established schools, chiefly of a higher grade, which have been the nurseries of teachers, and stimulators of the educational instinct, and progressive tendencies of the race. The number of these is very considerable, and the value of their work incalculable. It is difficult to ascertain how many there are, but the writer has obtained reliable data as to more than fifty, which have an average attendance each of one hundred or upwards. These probably embrace nearly all that there are of any importance. They have been in operation. or are the successors of others which had occupied the same ground, since 1868.

(4) The self-helpfulness of the colored people in the matter of education should not be forgotten. Almost from the day of the surrender, they have themselves supported, in whole or in part, what are known as subscription schools. Year by year, Hampton and Shaw and Fisk and Atlanta Universities, and other charitably endowed institutions, have sent forth their students to earn the pittance required for further tuition by organizing and teaching subscription schools in the country districts. In some States, as in North Carolina, the public schools work on the share-system as well as the farmers; in other words, the State pays half the teacher's wages, and the people of the district must raise the other half if they would have a school. The idea is a novel one, but it is not without its advantages.

WHAT HAS BEEN ACCOMPLISHED?

The question is a difficult one. Statistics are very delusive. The tables of illiteracy in this census are as unreliable as Baron Munchausen or

Jules Verne; their figures may not lie, but those who gave them unquestionably did. The colored man or woman is especially proud, not so much of the *ability* to read and write, as of the *reputation* of being able to do so. Besides that, the definition of literacy is a thing very hard for Tom or Dinah to comprehend. They honestly think that one who has acquired sufficient acquaintance with the Cadmean symbols to venture upon the familiarity of calling them by name, however doubtfully and hesitantly, is of indefeasible right entitled to be accounted among those who can read. They consequently report as many of the family able to read as possible; the enumerator has little time to verify their report, even when desirous of so doing. By such means are the miracles of the census tables of illiteracy wrought.*

To a less extent, the school reports of the various States are likewise unreliable. From all of these, however, we may gather data that will afford good ground for an estimate, which, though not demonstrably accurate, is sufficiently near to the truth to command the assent of all. In Tennessee, last year (1880), 60,000 out of 140,000 colored children within school ages, or three-sevenths of the whole number, attended the public schools one or more days; but the average attendance was less than one-third of the whole, and the average number of days the schools were open was but sixty-eight during the year. All things considered, this is by far the best showing yet made by any Southern State in the education of the negro: and under all the circumstances, I am bound to say that it is a marvelously good and encouraging exhibit.

After careful consideration of all the data accessible, I am of the opinion that if we say that one-fourth of the colored children of the South have been able to attend school one month in each year since 1865, or its equivalent during that period, we shall be rather above than below the facts. I am well aware that this is very greatly within the general Northern idea. Because the collective charity of the North has amounted to millions, the idea prevails there that schools for the colored people have been as plenty at the South as blackberries. Their location at all central points, and very flourishing condition, has strengthened this idea in the minds of tourists at the South. Those who have been continuing eye-witnesses even may at first doubt; but those who will count up the number of schools for the colored people in their own State for a few years after the war, and then take the facts of their public school reports since, will at once admit the probability of my conclusion.

Under the circumstances, how many, starting as they did as a-b-c-darians, and without any of the momentum of a cultivated ancestry behind them, have advanced so far as to be able to read ordinary English prose at sight, or to write with reasonable accuracy, upon ordinary business topics, which is the proper test of literacy? The question cannot be answered. For the reasons already given, the census tables do not afford

* The tables of illiteracy of the present census are not yet completed. These remarks are intended to apply to that of 1870, though the bulletins already issued give no better promise for the coming one. Indeed, it is doubtful if they can be made reliable in this respect.

even a fair ground for estimate. Misconception and misrepresentation have both conspired to falsify their aggregates. According to the census of 1870, for instance, more than ten per cent. of the colored male adults of the South were able to read and write. The statement is so utterly absurd, to one who has any knoweldge of the facts, as to require only to be stated to be instantly rejected. To say that five even in a hundred of the colored men of the South, twenty-one years of age and upward, in 1870, could read the tickets that they cast that year, would startle the credulity of any thoughtful observer. The ten per cent. and upward of the census no doubt fairly represents the number who really could read, *plus* those who had a dubious acquaintance with the capital letters, and those who claimed for themselves a power which was purely apocryphal.

It may however be safely assumed, that ten per cent. of the entire race are to-day able to read and write. It is true that this statement does not carry with it the presumption even, on their part, of the same general intelligence that a like capacity among the enlightened populations of the North would imply; but three most important things may be predicated even of this seemingly slight advance:

(1) It is very many times greater than the majority of the Southern people believed the negro capable of accomplishing sixteen years ago (2) It is much more than the thoughtful Northern man could have expected who witnessed the "send-off" in 1865. (3) It is far more than any one could have anticipated who knew the insufficiency of the means, and the difficulties attending their application.

As a result of this progress, we have the indubitable fact that thousands of white men at the South, who looked upon the education of the negro fifteen years ago as a nonsensical force, or a dangerous experiment, now regard it as quite practicable, entirely safe, and perhaps not altogether undesirable. They do not by any means admit the intellectual co-equality of the colored race with the white; but most of them now concede that to a certain point they are capable of education and improvement. Just exactly where this point may be has not yet been clearly determined; but the admission that it is somewhere above his present state, is one of infinite value to the colored man of to-day. It is not probable that the time has yet arrived when the average Southern man, if he could lift the colored people of the South at once into a state of like intelligence and culture with the white race, by instantaneous transformation, would be quite willing to do it. But it is believed that the time has come when the average Southern man looks upon the negro's efforts at self improvement, if not with sympathy and approval, at least without apprehension, except in certain portions of Mississippi, Louisiana and Texas, and that very many of them are awakening to the fact that such education is not only inevitable, but altogether desirable. So that we may well say, not only that the education of the negro in America has been a most eminent success, but that, considering the beginning, the means and the visible results, it has been the most signal instance of intellectual progress, on the part of a race or people, that history records within any limited period. In the case of the Israelities, it required the

utter extinction of the generation which had been in slavery, before they were accounted worthy of the responsibilities of free manhood.

BUT WHAT OF THE FUTURE?

If the past history of this movement is encouraging, its future prospects are altogether bright. In any movement, it is the first steps that are difficult. A race or nation is like a man; its infancy and childhood are the period of slow development; it is the alphabet of civilization that it hard of acquisition. What has been done, is but the seed of what is to be accomplished. The great apostle of manhood suffrage said that the elective franchise irrevocably lifted the fate of the negro to the destiny of the white race in America. He spake better than he knew. He wrongly supposed that the struggles of party, and interest of factions would induce an especial tenderness and regard for the fortunate possessor of a vote, despite his color. He regarded the ballot—as so many others have done—as simply so much marketable power, which the colored man might barter to one party or another for the special advantage of himself and his race. It was not a very ennobling lesson to instill into the minds of the new voters; but it is the doctrine on which so many sanguine people still base their hopes of a speedy adjustment of what is called "the Southern question." The true philosophy of this prediction lay in the fact that the elective franchise made the colored man an integral part of the governing power, and he is thereby enabled to wield an influence on the national destiny which cannot safely be left to the hands of ignorance.

Hitherto the colored man has been regarded by the country almost entirely in the light of a mendicant. He was a beggar when he asked for liberty, which we took good care not to grant until we could make a virtue of necessity. He was a beggar when he asked for equality before the law, the right of self-government, and the privilege of self-support. In all things he has been regarded as a suppliant. Both parties in the War of Rebellion seem to have held against him a sort of grudge, as being the unconscious *casus belli*. Now, thanks to the elective franchise, he no longer plays this role. The education of the colored man at the South has become a matter of national importance, not for his own sake, not even for the sake of the South especially, but particularly for the sake of the North. because of her interests, and to secure the predominance of the ideas which she represents. The fate of the colored man is linked with that of the poor white—the ignorant white man of the South; and both are inseparably bound up with the nation's life. God has coupled this accumulated ignorance with the palace-car of our civilization, and we must drag it on with us or be wrecked by its inertia. Slavery itself was but one phase of ignorance. The evil of slavery will not be removed until its cause is eradicated. The danger that threatened the nation from the existence of slavery is enhanced, rather than diminished by the fact of emancipation and enfranchisement, unaccompanied by intelligence. Because we have given the negro the ballot, we must teach him how to use it, or he will destroy us in his attempts to learn

the lesson we withhold. The sword, without knowledge of its use, is not only a vain thing, but the untrained soldier is almost as dangerous to his friends as to his foes.

It is fortunate for the colorod man that the ignorance of the South is so dense and concentaated that its influence and danger may be easily apprehended, cannot any longer be disregarded, and can only be averted by his elevation.

The results of the census of 1880 are not yet accessible in detail. Certain basis facts are inferable from the Census Bulletin No. 77, and other advanced figures furnished the writer by the superintendent of the census:

The population of the United States is.....	50,152.866
The population of former Slave States is.....	18,461,979
In which latter there are, Whites.....	11,312,979
And Colored.....	6,038,185

According to the census of 1870, the sixteen Southern States had a little more than one-thifd of the population, and almost three-fourths of the illiteracy of the whole country. This proportion, it is evident from the above table, will not be greatly changed by the recent enumeration. Of the colored adults, certainly not ten per cent. are able to read or write, while there is no reason to suppose that less than twenty-three or twenty-four per cent. of the whites are illiterate. So that we have, staring us in the face, this fact, that from forty-five to fifty per cent. of the voting strength of these States is illiterate. These sixteen States contain seventy-two per cent. of the votes necessary to choose a President, seventy-six per cent. of a majority in the House of Representatives, and eighty-odd per cent. of a majority in the Senate. In other words, it may be said that the ignorance of the South, *plus five per cent. of its intelligence, is able to exercise three-fourths of the power of the nation!*

It is no wonder that the prospect fills every thoughtful man with dread of the future. For his country's sake, he earnesty inquires: "What shall we do to be saved?" There is but one answer. This power, in the hands of these people, is only objectionable because they do not know how to exercise it for the general good. The only cure for darkness is light; for ignorance, knowledge.

For the sake of the nation then, its institutions and properity, these ignorant monarchs, in whose hands are three-fourths of the destinies of the country, must be taught to exercise their power with intelligence as well as with patriotic intent.

How shall this be done?

By using the power and revenue of the Government to aid and protect education at the South, both of the white and colored illiterates, until the great proportion of her people are able to read and understand their duties and responsibilities. This is not only necessary, but it is right. The North was almost equally responsible with the South for the continuance of slavery. The nation encouraged and protected the

institution. The manufacturers of the North, through the enginery of a protective tariff, levied toll upon every pound of tobacco, cotton and sugar. The nation is responsible for the ignorance which flowed from slavery, and was in fact its corner-stone.

The loss of emancipation fell upon the South. It is neither right nor possible for her to perform alone the enormous task of educating the eight or ten millions of illiterates in her borders. The North (which then constituted the nation) freed and enfranchised the slave. It is but fair that she should assume the responsibility of her own acts, and aid in carrying into full effect the measures which she promulgated.

Thus the future of the negro is linked with the destiny of the nation. We must make him wise or suffer by his folly. It is for this reason that the education of the negro promises so well. He has the united strength of two-thirds of the American people behind him. He *must* go forward, because we *dare not* let him stand still. If left to himself to-morrow, the white people of the country would be in hourly danger from his ignorance.

There is a poetic justice in this alternative which awaits our option. The Providence that never errs has meted out to us reward according to our acts. As we took the labor of the slave without compensation, we are made, as it were, trustees *de son tort* for his children, of the net result. The wealth we accumulated from his unpaid labor must now pay tribute to educate his descendants. Because we prohibited him from acquiring knowledge, we are in peril from his children's ignorance. Thus it is that "time at last sets all things even," and God "maketh the wrath of man to praise Him."

It is fortunate that the abstract question of the negro's capacity for intellectual culture does not arise in connection with any plan to promote his general enlightenment by national aid. The negro has been enfranchised, and there is no considerable class at the South who would be willing to see him disfranchised to-day, at the expense of Southern representation in Federal affairs. The great mass of the Southern whites look upon colored suffrage as a fixity, under all circumstances. The best of them have realized that his ignorance, as well as that of the white voter, is a source of constant danger. That the negro is capable of like development with the white man, not one of them in a thousand, perhaps, believes. That such development as he is accounted capable of receiving would be to the advantage of both races, a considerable proportion of them now freely admit. That the "Yankees," through the action of the national government, should be required to contribute to the education of the negroes whom they freed and enfranchised, the greater portion of them will concede with the greatest readiness. This movement happens to afford a common ground to the extremes of thought. The colored man approves it for the advantage it will bring himself and his race; the average Northern man, because it secures safety and a free ballot; the radical humanitarian, because it is a great, forward step towards universal intelligence and individual freedom; the Southern extremist, because it builds up and strengthens his section at the expense, in the main, of the North. In the whole country, there is

no considerable class who would, or dare oppose a tax to be levied in aid of an educational fund to be distributed among the different States in proportion of illiteracy, although of this fund only about one-fifth would come from the Southern States, and nearly three-fonrths of it would be distributed there. The War of the Rebellion has taught the country the truth of Lincoln's declaration, that the proclamation of emancipation should be sustained even "if it cost every dollar the nation has received through the labor of the slave." We are simply purchasing future peace by paying what we justly owe, in thus providing the cure for Southern ignorance. Besides that, we shall kill intolerance, envy and arrogance by promoting their natural enemy, intelligence.

That the American people are beginning to realize the truth and justice of this view, and to understand that the only real "reconstruction," and only possible chance for a homogeneous and secure future development, is in and through the establishment, so far as may be, of a parity of intelligence, is evident from the quick and universal response which they have given to every utterance of such a sentiment during the past year. Two of the writer's own works, which have no other purpose but to enforce this idea, has perhaps been as widely read, and with as general approval, as any works published in a score of years. The inaugural of the late President, one-third of which was occupied with this subject, received more general commendation on this point, awoke less disapproval, than any State paper that has appeared since the war.

There is no one, in the least familiar with the mental and moral characteristics of our late President, who does not know that James A. Garfield regarded this movement as the proper complement—the other and the greater part—of the act of emancipation which the first martyr-President began. That he aspired to make it the crowning glory of his administration, and expected thereby permanently to pacify and unify the two sections, which slavery and ignorance for more than a hundred years have held so far apart, there can be no question. And we may even dare to hope that the severe affliction of his martyrdom may largely aid to open the way for such a result by preparing the minds of the Southern people eo receive with favor the plan which he favored. For its success every good citizen should pray, as earnestly as he recently did for his recovery.

Loud he sang the Psalm of David!
He, a negro and enslaved,
Sang of Israel's victory.
Sang of Zion, bright and free.

And the voice of his devotion
Filled my soul with strange emotion;
For its tones by turns were glad,
Sweetly, solemn, wildly sad.

H. W. LONGFELLOW.

SOUTHERN EDUCATION.

BY REV. CHARLES TERRY COLLINS.

Sixteen years ago 4,000,000 freedmen suddenly knocked for education at the Southern school house. Their demand created a problem difficult of solution. What has already been done to solve it is one of the great modern triumphs of our Christian civilization. What remains to be done: one of the most sacred duties laid before the American citizens. To understand the subject we need first to review the situation in 1865.

(1). The educational system of the South was totally unfitted for meeting such a strain. The South had never provided for the white masses a free public education at all comparable to that furnished by Northern States. In 1660 the people of Virginia petitioned the home government for the means of education; the matter was referred to Governor Berkly, and he said: "I thank God there are no free schools nor printing, and I hope we shall not have them these one hundred years. (Dr. Bamas Sears: "Educational Progress in the United States, During the Last Fifty Years. "American Institute of Instrnction," July 7, 1880). The animus of Governor Berkly was too much that of the ruling class of the South toward the education of the masses. Its attention was confined in educational matters to the needs of the rich, and to furnishing advantages which they alone could enjoy. There are twenty-two colleges in the United States whose charters antedate this century; thirteen are in the North, nine are in the Slave States; while of the academies and preparatory schools chartered before 1800, twenty-nine are in the North and only six in the South. (Report of Commissioner of Education 1879; table 6, 7, and 9.) The figures are significant. They show a striving in the South after higher education for the few, and an indifference regarding common education for the many. The sons of the rich were sent to Northern colleges and European universities. Probably in the South have been some of our most highly cultured men; but in the same section has been the great bulk of our illiteracy. To-day it is calculated that at least 24 per cent. of Southern white adults are illiterate.

(2). The civil war made the educational condition still worse. During that strife, North Carolina was the only State which maintained public schools, and at its close her permanent school fund of $2,850,000 was lost, and to-day has been replaced by a fund of only $192,793. "At

that time, a few cities in the South had free public schools, but not a single State had an organized system for a similar purpose." (Dr. Curry.) At the same time, the private schools and endowed institutions of the South fell into a terrible state of disorganization, ruin and poverty. In 1879, after fourteen years of restoration and replenishment, the entire school property reported from eight Southern States was only $7,590,287. Alabama, Arkansas, Georgia, Mississippi, and Texas failed to report. Of these eight States reporting, Kentucky reported $2,300,000, and West Virginia $1,676,872. Excluding these two States, it is safe to say that south of them, in the real Confederacy, there were not in 1879 eight million dollars of school property, and this estimate includes the value of buildings, sites, libraries, apparatus, and all permanent funds. A comparison will help us appreciate the poverty of this provision:

	School Population.	School Property.
The South (eleven States)	3,673,064	$8,000,000
Missouri	362,370	9,000,000
Iowa	577,353	9,236,613
Michigan	486,993	9,011,454
Illinois	1,000,694	16,902,710
Ohio	1,043,320	21,103,255
Pennsylvania	1,200,000	24,063,138
New York	1,628,727	30,012,579

These statistics do not include the property of private and endowed schools not under State control—of which schools there are vastly more in the North than in the South.

(3). These miserably equipped States traditionally indifferent to the education of the poor whites, and opposed to the education of the poor blacks, were in 1865 bitterly poor. The Southerners went heart and soul into the cause of the Confederacy. Private fortunes, trust funds, and endowments were turned into Confederate bonds. The two billions of these repudiated by the results of the war represent an actual loss to Southern citizens, which can only be appreciated by imagining what would have been the condition of the North had greenbacks and United States bonds proved worthless. Besides this loss was that from the rack and ruin of a strife whose battles, and the march of whose armies, were over Southern soil. Industries were prostrated, railroads and machinery worn out, commerce killed, society disorganized. Yet this South was forced to come beneath the debt of the Union and lift it under equal taxation with the North; and to this, its just share in the national debt, was soon added the heavy burden of the State debts. No one can deny that, for a few years after the war, much of the political power of the South fell into the hands of incompetent, untrustworthy, and often designing men. The public funds were mismanaged, if not plundered, and immense State debts loaded on the unfortunate people. The State

debts of these thirteen States are $146,572,533.16. Virginia has $31,727,083; North Carolina, $27,120,228; Tennessee, $26,842,850. Taxation became excessive. According to the census of 1870 the property of the South had shrunk into two-thirds of what it was in 1860. Massachusetts had $1,463 for every man; Alabama had $202: Georgia, $226; North Carolina, $243 for every man. To-day Georgia has, for each inhabitant, $155; Alabama has $95; North Carolina has $102; while Ohio has $487.

(4). The problem of educating the negro was still further complicated. The negro was not recognized as possessing intellectual ability—hardly as possessing manhood. Men had been trained to regard it as a wrong to educate him. The community was apathetic regarding popular education of any kind, but hostile to his education. These new citizens who required education were scattered through rural districts under conditions which taxed the ingenuity of educators in the most enlightened States. Only one million of the Southern population is in the cities; of the Nation one-fifth are in cities; of the South one-fifteenth.

This was the problem of negro education in 1865, viz.: How to reach with educational privilege an indifferent, illiterate, embruted population, living in sparsely settled, poor, agricultural districts, where no provisions had ever been made for popular education. The Southern people, who were forced to meet this problem, were poor, badly in debt, strained to their utmost resources to restore their ruined industries, sore in spirit with defeat. For ten years after the war it was with them a struggle to live. We at the North cried angrily, "They don't educate;" we cried bitterly, "They won't educate." Well, this was perhaps true; but we might and ought to have said in charity, "They can't educate."

What has been accomplished in these sixteen years, and by whom has it been done? Northern Christian philanthropy immediately rushed to the rescue. It is not possible to speak in too glowing terms of the generosity which furnished needed money and the sacrifices which furnished the needed teachers. These Northern missionaries, bearing education to the Southern freedmen, have been the great martyrs and heroes of this century. Some of them may have made mistakes, and outraged Southern feelings, but the body of them have borne social ostracism and abuse, and labored, insolated from all congenial surroundings, at a most difficult and often discouraging task. Their work will grow in importance, and shine brighter in its Christian self-sacrifice as the years give it perspective. These men and women have been supported by a most signal generosity in the North. Since 1865 its benevolent people have given millions of dollars to set the negro free from his debasing bonds of ignorance. The cause of freedmen's education rolled through the twelve months last year on fifty thousand golden wheels, and each wheel was a ten dollar gold piece, placed there by Northern philanthropy. Our Commissioner of Education reports, in 1879, one hundred and twenty-nine Southern schools of higher education for colored people, with over fourteen thousand scholars, and against nearly every one of these schools is a name which indicates that it sprang out of Northern Christian aid. These schools and Northern teachers have been

important educators of the conscience of Southern whites, and thus have done much in creating the change of Southern sentiment regarding negro education. It may be interesting to notice the sources whence this work draws its financial support:

The Peabody Fund, created by a Northern man, appropriates about one-fourth of its $75,000 income to the Colored Schools	$ 18,500 00
The United Brethren	183 00
The American Baptist Home Missionary Society	89,265 72
The Freedmen's Aid Society (M. E. Church)	104,376 25
The American Missionary Association (Congregational)	130,929 82
Total	$343,254 79

The figures are from the latest accessible reports, and give the expenditure for strictly educational work, and do not include the cost of collection and administration. These are the only religious societies which make reports clearly distinguishing the educational work from the mission work. The Presbyterians expended (report 1881) in missionary and educational work on the field $48,102.50. The Episcopalians, while doing little educational work through their domestic and foreign missionary society, have diocesan schools throughout the South. The Friends have no general society, but work through committees in the various State meetings. They are doing a large relief and educational work in Kansas, but their strictly Southern work is chiefly confined to Smithland College, Arkansas, and Maryville Institute, Tennessee. In these they spent last year $9,613.04. Warner Institute, Jonesboro, Tenn., is taught and largely supported by Friends, although not formally connected with them.

The work accomplished by this benevolence may be itemized thus:

	Teachers.	STUDENTS.					
		Theological.	Law.	Medical.	Collegiate.	Normal.	Total.
American Missionary Association	200	102	23	.....	75	2,339	8,113
Methodist Episcopal Church	80	372	23	85	90	1,100	2,490
Baptist Church	53	367	.....	.....	.....	.....	1,592
Presbyterian Church	*70	*79	.....	.....	.....	.....	1,527
Friends	11	.....	.....	.....	.....	.....	511
	417	920	46	85	165	3,439	14,233

* Forty-nine of these are colored teachers.

But a more important question for the final solution is, "What has the South done?"

A healthy and permanent educational work among freedmen must originate among and be supported by the South. The work is too great for the North to assume alone; too important to be left dependent on charity, and one in which it is easy to pauperize and injure the cause by too much outside aid.

It is really from the standpoint of what the South has done, that we begin to appreciate the revolution wrought in the past sixteen years. This work of the South may be summed up under several heads, as follows:

(*a*). It has given the legal right of education to the blacks. Twenty years ago it was a crime in these States to teach a negro, now it is, as it were, a legal crime not to teach him. The constitutional law of these States declares he shall be educated equally with the whites, and prominent State Commissioners of Education assert they are doing, and will do, all that in them lies to carry out this law.

(*b*). It has actually established in every State public common schools for the blacks. There were in 1879, 14,341 such public schools, and 685,942 colored scholars enrolled in them.

(*c*). It has provided for an equal division of the school fund per capita between white and black children. The exceptions to this rule do not come from the States of the Confederacy. Kentucky and Delaware give only what the blacks themselves pay in taxation. Maryland makes a biennial appropriation, and the District of Columbia gives one-third of the school fund. The real South is more just. I hear no complaint that this money is withheld or unfairly divided.

(*d*). These laws regarding the education of the blacks have been ratified in constitutional convention called ten years after the war, in which the whites were a majority. The Southern whites thus accept and approve them, and, under these self-appointed laws, the Southern taxpayers gave, in 1879, about four million dollars to educate freedmen—eight times as much as Northern philanthropy gave. Of course there is no comparison in the moral worth, but there is in the economic worth of these two sums. Besides this Virginia gives $10,000 to Hampton Institute; South Carolina $7,000 to Claflin: Georgia $8,000 to Atlanta College; Mississippi $10,000 to higher education; Missouri $5,000 to Lincoln Institute; Louisiana from $5,000 to $10,000 for a university for colored students.

(*e*). The Southern Christian conscience has at least partially awakened to appreciate the situation, and to give the North credit and respect for what it has done for negro education. The administrator of the Peabody fund is an ex Confederate Senator—Dr. J. L. M. Curry—and he asserts (what seems true) that he knows no distinction between blacks and whites in his distributions. About one-fourth of that fund goes directly to the freedmen. Such men as Commissioner Orr of Georgia, Senator and ex-Governor Brown of Georgia, Governor Holliday of Virginia, General Humes, a Major General in the Southern army, and President Haygood of Emory College, Georgia, utter sentiments which are all we could desire, and seem willing to endorse them with consistent deed. Every

Northern Christian who desires to do justice to the South, and form impartial views of the situation, ought to read "Our Brother in Black" by President Haygood of Emory College, Oxford, Georgia.

The Southern Presbyterians have a Theological Seminary for educating negro preachers at Tuskaloosa, Alabama. It is six years old; has twenty-three students, three professors, and offers a high course of study, including Hebrew and Greek. The Southern Episcopalians have several diocesan schools.

The Southern Baptists claim to be at work. President Haygood, author of "Our Brother in Black," is a member of the M. E. Church South, and is said to represent the intelligent and influential portion of his church body. Letters from members of these different denominations assure me of the sympathy and activity of Southern Christians. It is newly awakened, and somewhat crippled by poverty, but it seems genuine. President Haygood states that an ex-Confederate and an ex-slave holder in Georgia has just given $5,000 for a colored college, to be under the patronage of a colored church in a city of Georgia. It is true that these men are not representatives of the prevailing sentiments among the Southern masses, but they do represent the drift of Southern sentiment. They may be ahead of the great body, but they, with many more like them, are leaders, and the great body follows—forced on by the logic of truth—by every selfish interest of self protection, and every sacred inspiration of Christian faith. There are hundreds of thousands of Christians in the South, who, with the word of God in their hands, and the Spirit of God in their hearts—as unquestionably they have both—cannot long remain in the dark. There are many reasons for dealing leniently with these men. They have suffered more than we through the civil war, and have the natural prejudices and bitternesses of the conquered. They have been kept at home by poverty and have not traveled North and mingled among us to learn our real sentiments toward them. They have followed, even more blindly than we, designing and unscrupulous political leaders, who have for a purpose prolonged the sentiments engendered by the late civil war.

This waking up of the Southern people is an important factor in solving the problem of negro education. 1. The schools and colleges established for the freedmen are in a state of siege and crippled usefulness until they have the sympathy of the community in which they are.

2. There can be no healthful work of education which does not spring up from forces within these States themselves. To do the work they should do is to pauperize them and belittle the cause. Southern whites must teach these blacks—Southern whites must create a system for themselves to reach their own illiterate masses.

3. The waking up to the rights and needs of the freedmen is part of a general monument in recognition of New England principles of thrift and intelligence—sure to end in some system of common school education for both white and black poor children.

We may then sum up the more hopeful side of the outlook by saying (1) that the North has organized efficient societies and established in

important centers numerous schools of secondary, higher, and professional training; (2) that the States have the proper laws, the kernel of a suitable public school system, and already have enrolled a large portion of the colored school children; that the sentiment among leaders in the South is now favorable to negro education and alive to Southern illiteracy, and promises a new field for Southern education. But this is only one side and the more hopeful side of the subject. When we ask "What remains to be done?" we are brought face to face with a great uncompleted work.

It is no disparagement of what has been done to say that relatively to what is needed it is small and utterly inadequate. Statistics of schools are very inaccurate. Every teacher's pride is excited to make the best possible return. It is startling to find that even thus only 42 per cent. of the colored children are reported as even enrolled. There are 14,000 public schools for eolored children, but they are held almost anywhere and anyhow. The school house is unsuitable, the teacher incompetent, the terms short and uncertain, aud the attendance irregular. The case of the poor whites is little better; not two-thirds of them are caught in the schools long enough to be enrolled. In 1879 Arkansas reports 22 per cent. of both whites and blacks in her schools; Louisiana 31 per cent. of her white and 26 per cent. of her black children; Virginia enrolled 26 per cent. white and 18 per cent. black. It is but fair to acknowledge these the worst records in the South. South Carolina has 70 per cent. white and 44 black; Texas 69 per cent. white and 75 per cent. black enrolled. New Jersey has the poorest Northern record and enrolls 62 per cent. These public schools are almost the sole source of primary education. In the North the public school system is supplemented by a very extensive private school system.

The financial support given these Southern schools by the State is utterly insufficient. A table of the per capita expenditure for education by the State is instructive. Massachusetts heads it with $15.26 per capita (Ohio pays $6.61). After the Northern States and Territories comes Utah, $3.83 per capita, and creeping after this Mormon Territory comes West Virginia, $3.05 per capita, leading the line of Southern States that dwindles down to less than a dollar a head.

We have noticed how poor the South is in school property. It must increase the cost of suitable education, where buildings, apparatus, etc., are lacking. Yet the annual school incomes in these States are very insufficient.

The entire school income of the South, including Kentucky ($1,827,575), thirteen States, is $8,586,779. Compare this with the North:

	School Population.	School Income.
The South (thirteen States)	4,419,930	8,586,779
Ohio	1,043,320	7,747,485
Illinois	1,000,694	8,285,539
Pennsylvania	1.200,000	8,210,084
New York	1,628,727	10,254,499

Of the forty-two normal schools for colored people in the South only twelve receive aid, which all told equals two-thirds what Massachusetts gives her six normal schools, and not quite one-half what New York City gives its one.

It is no exaggeration to say that millions of dollars are immediately needed to supply the South with school houses and the material apparatus of education; millions more to create and endow academies, colleges and schools, furnishing the higher education necessary to equip teachers for these common schools; and an increase of many millions to the present State school income to enable such a school system to do fit work. The South has the kernel only of a school system for colored children; it is yet to be developed and perfected. Whence shall this money come?

Unquestionably a proper spirit in the South would lead to an increase of appropriations. The States are not doing relatively to their ability what Northern States do. Yet the failure to provide for colored children is not so much due to prejudice against color as to other causes which affect equally the interests of white children.

Ex-Senator Bruce of Mississippi lately told that when riding through poor agricultural districts, and seeing the poverty or even absence of educational privileges for colored people, he would boil with indignation, and yet be forced to admit that there was no better provision for the white children. If there is a neglected class in the United States it is the poor whites of the South. The difference between the enrollment of the races is not so great. The greatest difference is in South Carolina —70 per cent. whites vs. 44 per cent blacks enrolled. In the next State, North Carolina, 57 per cent. whites are enrolled vs. 55 per cent. blacks; in Texas, 69 per cent. whites vs. 75 per cent. blacks. Not two-thirds of the Southern white children are educated in the schools.

The great reason for this may be the traditional indifference to popular education, yet we do a great injustice if we do not recognize the financial situation of the South. Arkansas and Kansas are two neighbor States, where the line between Southern and Northern character is markedly drawn.

	School Population.	Enrollment.	Increase.	Expen. per cap.
Arkansas	236,501	22 per cent.	$ 261,988	$1 10
Kansas	312,231	67 per cent.	1,868,563	5 09

But on the other hand Arkansas has a debt of $5,096,405. Her whole property is only estimated at $86,892,541, and the rate of taxation per $100 is sixty-five cents. Kansas's debt is one-fifth as large, her property twice as much, and her rate of taxation fifty-five cents per $100.

There is something suggestive in a table comparing together the educational appropriations and abilities of Northern and Southern States.

For example, take the following comparisons between Louisiana and Massachusetts, and between Virginia and Wisconsin :

	School Populat'n.	School Income.	School Property.	Taxable Property.	State Income.	Debt.	Tax per $100.
Louisiana....	330,930	$ 613,453	$ 700,000	$ 149,635,805	$2,432,188	$16,332,493	0 60
Massachusetts	303,836	4,399,801	.....	1,584,756,802	4,950,000	20,785,016	0 035
Virginia.	483,700	670,706	1,088,957	319,392,559	2,067,678	31,727,083	0 50
Wisconsin....	483,573	2,756,881	1,169,979	438,971,801	557,003	2,000,000	0 103

The above comparison can be carried on indefinitely. The South is taxed all out of proportion to the North, and viewing her resources, her debts, her present taxes, very large increase to her school fund cannot be expected. The peril to our whole Nation from this illiterate South can hardly be overstated. To day illiteracy in the North is only eight in every one hundred voters; in the South it is forty-five in every hundred. In the last ten years the whites of the South have increased 28 per cent., the blacks 84 per cent. We cannot afford to wait for the South to come up to the situation, either in interest or resource; for meanwhile we shall be erecting a mass of illiterate Southern voters capable of working no end of mischief. No one can tell what problems in the next quarter of a century are to be decided by these illiterate voters.

The slave, without a vote, indirectly brought on our civil war; the slave, unchanged and armed with a ballot, will be a yet more dangerous political factor. They will, in any case, poison the religious, moral, social, and political veins of the whole Nation. In these days of electricity and steam, an ignorant State is to the Nation what an ignorant ward was to a city fifty years ago. Forty-five per cent. of the Southern voters are illiterate; if one-tenth of the remaining intelligent voters join with them, they control the South. How much of the North must join the South to control the Nation? The merchant, the politician, the manufacturer, the philanthropist, and Christian, all have interests at stake.

If the danger is to be met immediately, both because of lack of interest and lack of means in the South, aid from without must come to the rescue.

There are two sources to which we may look for aid in awakening the South to her responsibility, and in supplementing her inadequate resources—the spontaneous benevolence of the North and the National Government. Rightly understood each has a responsibility in this matter.

To Northern benevolence—expressed through gifts of individuals, and the organized activities of societies—we must look for the means and stimulus of higher education. The North cannot be expected, and never has undertaken to furnish primary instruction for the colored masses of the South. It has confined its labors to the higher education. The wisdom of this course is seen in the stimulus which its schools have

given to the cause of education. They have opened the eyes of the Southern Christians and citizens to the rights and possibilities of the Southern negro, and done much in creating the Southern sentiment of approval regarding which I have spoken. More can and should be done in this way of educating public sentiment through the maintenance of such schools for blacks. Such schools will indirectly end in better provision by the State for both white and black children; but they are also of direct practical importance. They must furnish the teachers and preachers needed for the colored schools and churches of the South. Schools for higher instruction do better when under other than State control. The obligation of the State to give instruction may well be questioned. There is, too,—as has been proved in the North--greater probability of religious influence in non-State schools. The negro is very easily led by his religious teachers—to furnish intelligent ones is of the highest importance. The character and influence of the schools supported by the North is shown in the fact that the large majority of scholars in them are preparing for teachers and preachers. In 1879 forty-two were studying law, ninety-nine medicine, seven hundred and sixty-two theology. (Commissioner Eaton's Report.) If this be compared with the s atistics given in 1881 by the various societies, it will be seen the proportion of theologians is increased (theology 920, law 46, medicine 85). Some may think a proper limit in the supply of such schools has been reached. Yet it is noticeable that in 1879 there were 14.054 scholars in all the grades of these schools, and 14,321 public schools waiting for suitable teachers—less than a teacher for each school if every scholar went through and graduated. The school demand supplied, there remain a million and a half colored church members waiting for intelligent pastors. Such schools for higher education have in the North been founded by private benevolence. If they are to have a similar history in the South. it must for some time be through Northern beneficence. The surplus wealth needed for such gifts is here. We must produce more Peabodys and Mrs. Stones. It is true that the North has given nobly to the South, but nothing like what it has done in the same period for similar schools in the North. In 1879 the privately endowed institutions North and South lay before Northern wealth and generosity. No one can deny that the greater need, from an educational standpoint was in the South. The North gave in 1870 $4,885,220 to its own private schools, and $364,590 to the South. It is whispered that this past year over $18,000,000 has been donated for educational institutions in the United States. Not one-twentieth will probably go South. There is every motive to give, since the South is waking into sympathy and appreciation. We help those helping themselves, but the real uplift in this cause ought to come from the National Government.

The inability of the South to meet this need, and the very need itself, come from slavery. The fault of and the penalty for slavery should be registered against the real criminal, viz.: the Nation. We of the North only paid part of the penalty in the blood and treasure wasted in the

civil war. We should not be too self-righteous over the absence of slavery in the North. Economic, rather than moral, reasons led to its abolition among us after the Revolutionary war. But Northern representatives in Congress continued to pass laws endorsing and regulating it in the Nation. Our conversion, as a people, to anti-slavery in 1865 was sudden. Not fifty years ago mob law, and even statute law, were invoked against a Quakeress in Connecticut for teaching colored girls to read. Only within a few weeks has the Supreme Court of Illinois abolished the distinction of color in its schools.

The Nation supported slavery in the South, let it now support the educational system which is to abolish slaves. The emancipation proclamation gave legal liberty, education alone can give genuine liberty. The poverty of the South, and the gigantic nature of the task, are sufficient reasons for national aid, which would be less pauperizing than private charity, and would be amply warranted by the precedent of aiding railroads which open up new sections of country. The question is a serious one, what we shall do with our enormous revenues. To change our tariff is to change the equilibrium of trade. Yet the rapid reduction of our debt must soon make some change necessary, unless some of these surplus millions are given to Southern education. Bills have been already introduced into Congress regarding Southern education, but no one has become a law. The chief of these is the Burnside bill, which superseded a bill introduced by Senator Hoar. The main features of this bill are an appropriation of the moneys from sale of public lands, and the receipts of patent office to constitute a permanent fund invested in 4 per cent. United States bonds, interest of which should be apportioned among States and Territories in direct proportion to their illiteracy. The sale of public lands varies in amount each year. In 1881 it was larger than for several years, but shrank from $4.020,344 in 1869 to only $924,781.06 in 1879. It was however hoped that about $1,500,000 a year could thus be set aside, constituting in ten years a fund of $15,000.000. This bill has passed the Senate only by a vote of 41 to 6. Senator Teller has introduced another bill favoring immediate appropriation from the Treasury of $10,000,000 a year. Senator Blair of New Hampshire one providing that for ten years to come there shall be an annual appropriation for the first year $15,000,000, the second $14,000,000 and so on, diminishing $1,000,000 each year for ten years. The apportionment is to be in proportion to illiteracy, and to be used in aiding the common school system, instruction free to all. No State or Territory is to receive aid unless its own appropriation be one-third that allotted to it by the Government during the first five years and equal to the national grant during the next five. These bills show the sense of our national peril felt by our legislators at Waihington. President Hayes was the first President to draw attention to this need, and President Garfield looked to it as a great means of reconstructing the South. With such examples and the facts of the case before them, it seems strange that the people of the North are generally so ill-informed and so indifferent regarding education in the

South. The sun lifts every minute two billion drops of water up three miles into the clouds, and when this is set free its force is equal to trillions of horse power. But when our Christian love and civilization shall have lifted these ignorant masses up into intelligent, purified manhood, and when thus elevated they are let loose upon our civilization, they will pour into it a force, mightier to do, more priceless in its effects, than all the steam power that tugs and pushes at the material tasks of a continent.

DO IT NOW

Wake, thou that sleepest in enchanted bowers,
Lest these lost years should haunt thee on the night
When death is waiting for thy numbered hours
To take their swift and everlasting flight;
Wake ere the earth-born charm unnerve thee quite,
And be thy thoughts to work divine addressed;
Do something—*do it now*—with all thy might;
An angel's wing would droop if long at rest,
And God Himself, inactive, were no longer blest.

Rouse to some work of high and holy love,
And thou an angel's happiness shalt know—
Shalt bless the earth while in the world above;—
The good begun by thee shall onward flow
In many a branching stream, and wider grow;
The seed that in these few and fleeting hours
Thy hands unsparing and unwearied sow,
Shall deck thy grave with amaranthine flowers,
And yield thee fruits divine in heaven's immortal bowers.

TIME

That great mystery of Time, were there no other; the illimitable, silent, never-resting thing called Time, rolling, rushing on, swift, silent, like an all-embracing ocean-tide, on which we and all the universe swim like exhalations, like apparitions which *are*, and then *are not*. This is forever very literally a miracle—a thing to strike us dumb; for we have no word to speak about it.—CARLYLE.

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LIFE OF

ALEXANDER VON HUMBOLDT,

The Great Traveler.

A MAN OF UNIVERSAL SCIENTIFIC KNOWLEDGE.

Lives of great men all remind us,
We can make our lives sublime;
And, departing, leave behind us
Footprints on the sands of time.

—*Longfellow.*

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[illegible] goods are [illegible]. We handle [illegible] thus we buy lower [illegible] we put the smallest margin [illegible] goods, and SELL THEM TO [illegible] are treated alike. The [illegible] no deviation under any [illegible] as the most expert judges. Besides [illegible] In the first place we allow no mis- [illegible] article should not prove satis- [illegible] as the following guarantee will [illegible] package which leaves our store.

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[illegible] goods by us, is warranted to give reasonable [illegible] should it fail to do so, we stand ready, on sight of [illegible] good to the customer, not in apologies or excuses, or [illegible] HARD CASH OUT OF THE MONEY [illegible] reason the article should not prove satisfactory when ex- [illegible] at liberty to return it any time within a year, in good order, [illegible] refund the MONEY, instead of compelling you to exchange it [illegible]

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ALEXANDER VON HUMBOLDT,

A NOBLE BENEFACTOR OF HIS FELLOW MEN.

ORGANIZED BY THE BUSINESS MEN FOR THEIR EMPLOYEES, AND THE PEOPLE.

CLEVELAND, OHIO.
1882.

LIFE OF ALEXANDER VON HUMBOLDT.

Search, penetrate through Nature's land,—
Who searcheth only doth command.

IMMATURE AND MATURE GENIUS—A COMPLETE CAREER.

Among the men who have endowed the world with something that, to use the expressive words of Milton, "it would not willingly let die," two classes may be considered as occupying the opposite points, at the beginning and the end as it were of the list of worthies. In the first class may be placed those who, making their way out of the surrounding crowd by sheer force of intellect, gave unequivocal evidence of the power that was in them, and were then cut off before the promise had ripened into fruition. To this order belong such geniuses as Chatterton, "the wondrous boy who perished in his pride," self-slaughtered, after enduring till they could be borne no longer the pangs of hope deferred, and neglect and hunger, till doubt darkened into despondency, and the torn-up manuscripts and the phial of poison remained to show how despondency had blackened into despair. Poor, mild, gentle Kirk White, in his very eagerness to improve the gifts that were in him, and from feverish anxiety to vindicate the good opinion of those who had put him forward, studying himself into a decline. Andre Chenier, the graceful and genial French poet, perishing by the guillotine on the 25th of July, 1794, only two days before the fatal ninth of Thermider, which witnessed the fall of the tyrant Robespierre and his faction, and would have opened the prison-door to the poet, as it did to thousands of other captives; the fates were against him. He had not time to tell the world half he had to say before the grim sergeant, Death, here personated by Citoyen Sanson, arrested him and bore him off to the shades, and thus was he relegated to the ranks of those whose names remain to show what might have been. The opposite class consists of those whose lives are marked by completeness; whose work, begun early, is carried through to a perfect and satisfactory end. To few is it given to labor on successfully and happily from the morning to the late evening of their day; to feel such pleasure in their toil that they continue it with hardly an effort, never feeling the longing to crown a life of labor with an age of ease: men who in their lives win some of that loving appreciation which is in general awarded only to those who have passed beyond the consciousness of earthly praise or blame. Such a man—indefatigable, earnest, and happy in thoroughly fulfilling his vocation as one of the leading scientific investigators of the present century—was the great philosopher whose life and work we here endeavor briefly to sketch.

A GREAT AND LENGTHENED USEFULNESS.

Living to the almost patriarchal age of ninety years, at work almost to the last, publishing his latest great literary effort at an interval of more than sixty years after his earliest work; the friend of kings and princes, and yet proud and glad to popularize science by public lectures to his countrymen; marvelously gifted and deeply learned, yet a student to the end of his days—this great investigator has left behind him a name equally reverenced and beloved among his own nation, and honored throughout the world. It is hardly possible to estimate too highly the services he rendered to science, and a detailed account of his life and labors alone could put forward in their true proportions and importance the result of seventy years of work. Suffice it to say, at the outset, that he was the first to teach, by his own unwearied investigations, the unity of the great operations of the natural world, the relation each of the elements bears to the whole; to arrange in marvelous order and method before the eye of his reader, in logical sequence and proportion, the various truths before presented in mere aimless confusion; separating ascertained fact from hypothesis, showing the operation of great natural laws in phenomena that appeared dependent on chance; uniting the scattered and isolated natural objects into groups, and investing with new interest the wondrous works of creation.

The duration of the distinguished natural philosopher's career is as remarkable as the astonishing diversity of his acquirements. Between the publication of his first scientific treatise and the completion of the great work, the "Cosmos," which he looked upon as the crowning achievement of his life, more than sixty years elapsed; the first-mentioned work being published in 1790, the latter in 1854; and the whole interval between these two dates, that thus mark the beginning and the end of Humboldt's literary activity was filled with work in various departments, one of which would have been considered amply sufficient to employ all the energies of even an active and untiring man. Every division of natural philosophy was enriched by new facts, theories, and conclusions drawn out by the genius of this extraordinary man, who may be looked upon as the very "admirable Crichton" of science. At one time he is found writing, with a marvelous fund of well ordered information, on the distribution of plant-life over the globe; at another, he discourses learnedly and originally on the structure and action of volcanoes; electric science, the laws and conditions of climate in various parts of the earth, the geological structure of continents, the wonders of insect life—all came within the comprehensive scope of his investigations. And eminent as he was, and vast as were the stores of his knowledge, he was entirely free from all taint of self-consciousness or intellectual pride. Ever ready to give all credit and honor to his fellow-workers in the field of science, he seems in his works to rejoice with the cordial heartiness of a friend at every success achieved by one of them, criticising their work in the kindliest spirit, ready to approve, slow to reprehend. With himself, on the contrary, he is severe, speaking as if under correction even where he chronicles the result of long and patient research. Of him it may be said, as of Chaucer's grave clerk of Oxford: "Of study

toke he moste care and hede; and gladly would he learne, and gladly teche."

EARLY YEARS—A FORTUNATE CHILDHOOD.

The year of the birth of Alexander von Humboldt was remarkable as giving to the world various men who in widely different spheres became famous. It was 1769, the year in which Wellington, Napoleon and Cuvier were born. The Humboldts were an old Pomeranian family, with a strong military dash in their blood. The grandfather of Alexander was a captain in that well-drilled army of Frederick William I. of Prussia, whose giant guard regiment excited the astonishment of Europe; and the philosopher's father, Alexander George von Humboldt, occupied the distinguished post of adjutant to Ferdinand of Brunswick, the hero of Minden, and of many another hard-fought field during the great Seven Years' War. The little Alexander, with his elder brother Wilhelm von Humboldt, afterwards distinguished for his classical and historical attainments, had the advantage of an excellent education. The boys' first tutor was that Joachim Heinrich Campe who afterwards became celebrated throughout Germany as one of the first men who regarded education as a science, and based instruction on an appeal to the reasoning power, and not merely the memory. Campe especially strove to interest his little pupils in the wonders of foreign lands, and the marvels of animated nature; and thus from an early age was kindled in the mind of the young Alexander that thirst for knowledge, and desire of discovering scientific truths, that led him at a later period to undertake journeys and voyages into distant climes, under circumstances of exceptional peril and difficulty.

The boys appear to have spent a happy childhood at their father's old country home at Tegel, not far from Berlin, where Major von Humboldt, now in retirement after the close of the great war, was honored annually by a visit from the Prince of Prussia, afterwards king under the title of Frederick William II. It is remarkable, and may perhaps be a comforting reflection to anxious parents and teachers who are apt to be discouraged by an absence of quickness of apprehension in boys, that Alexander von Humbodlt was acknowledged to be slow at learning: so that even his mother and tutor, who after the death of the Major watched carefully over the boys' progress, were fain to acknowledge that Alexander was dull of comprehension, and would probably not make a scholar.

As in a thousand similar instances, the reflective, quiet cast of the boy's mind, deliberate in grasping ideas, but tenacious in retaining, and indefatigable in comparing them, was misunderstood, while the readiness and facility of comprehension in the elder brother William were perhaps over-valued.

A REMINISCENCE OF A GREAT KING—UNIVERSITY DAYS.

One notable reminiscence of the two brothers, who were then, as they remained to the end, fondly attached to each other, was a grand review of the troops at Spandau by the grand old hero, Frederick the Great, at which they were present on the 19th of May, 1783. The "snuffy old

lion," as Carlyle calls him, though long past the Psalmist's threescore and ten, had still as sharp an eye, and as ready an interest in things military as in the days of his strength; and only the year before his death, he remained for many hours on horseback, on a field day, in a pelting rain that wetted him to the skin, and sent the broad brim of this cocked hat slouching over his brave old face. It was the exceptional fate of Alexander von Humboldt that his life was prolonged till the reign of the fourth successor of the great Frederick.

Never surely were two fortunate youths more favored in the preparation for the active duties of life than were the two brothers. Early association with some of the best teachers in Germany awakened and stimulated their interest for learning. A residence at the University of Frankfort, on the Oder, then rising fast in reputation, afforded each of them an opportunity of following his peculiar bent of study; William inclining to classical literature, and Alexander to science. After two years, Alexander removed to Gottingen, then considered as the most distinguished of the German seats of learning. The acquaintance of the celebrated naturalist Blumenbach, and still more that of George Forster, who had accompanied Captain Cook on his second voyage round the world in the capacity of botanist, and was never weary of relating the marvels of the tropical world, increased in the young student the longing for scientific exploration and adventure that had been long before awakened by the teaching of Campe, now a high dignitary in Brunswick, but still preserving his friendship for his former pupil. At the end of their University career, the two brothers parted for a time. William, who was about to enter on a diplomatic career, went in 1789 to Paris with Campe, who desired, as he expressed it, to witness the obsequies of French despotism; for the Revolution had begun, the Bastile was down, and Mirabeau was thundering in the hall of assembly on the sovereignty of the people. Alexander, for whom natural science had far greater charms than politics, started soon after with Forster on his scientific journey to the Rhine, Holland and England; and then it was that his first investigations were embodied in a modest work, entitled "Mineralogical Considerations on Some Basalts on the Rhine."

GEOLOGICAL STUDIES AND USEFULNESS.

Geology had now begun to engage attention. Gottlieb Werner, of Freiberg, the Government Inspector of Mines, the "father of modern geology," had just started the Neptunian theory, wherein, forming his conclusions from observations confined to the restricted area of the mountain systems of Saxony, he ascribed an aquæous origin to rocks of all kinds; soon to be confuted by Hutton, of Glasgow, who, rightly judging that the Grampians presented indications of the action of fire rather than water, started the opposing Plutonic theory; soon in its turn to be supplanted by the completer system of "Stratum Smith," of Cheltenham, who assigned to each of the actions a certain share in the arrangement of the earth's crust. Humboldt, at first a follower of Werner and his theory, found reason, in the course of time, considerably to modify his views on this, as on many other questions of natural science.

Baudin; but France had now other matters more urgent than exploration in hand, and war thrust aside science. Therefore the friends were glad to take the liberal offer of the Spanish King, who thus deserved the credit of having assisted the great scientific discoverer, Humboldt, as his remote ancestor had furthered the aimsof the great geographical discoverer, Columbus. From the day when the *Pizarro* ran out of the harbor of Corunna, Humboldt was indefatigable in investigating, comparing, and experimenting on the various phenomena of nature. Among his first observations, afterwards embodied in his "Personal Narrative," were very valuable remarks on ocean currents, especially on the Atlantic Gulf Stream. He points out how tropical plants, and waifs and fragments of ships and cargoes from the Antilles and the shores of the Gulf of Mexico, are carried across to North-western Europe by this great "river in the sea;" how the wreck of the *Tilbury*, an English ship drifted across from Jamaica to the coast of Scotland; how even canoes with American savages in them have come across the Atlantic to the Azores and the Canary Islands. "This last example," he says, "is the more worthy of attention, as it proves at the same time how, at a period when the art of navigation was yet in its infancy, the motions of the waters of the ocean would contribute to disseminate the different races of men over the face of the globe."

The striving of Humboldt, in all his investigations, was to bring together instances of various kinds, collected over a vast area, to prove the existence of great general laws. Later scientific observers have followed in the track first indicated by the great Prussian philosopher, whose work is equally valuable for what it achieves and what it snggests. The subject of oceanic and atmospheric currents as popularly elucidated in the late Commodore Murray's "Physical Geography of the Sea," is based, so far as its propositions and reasonings are concerned, on the work of Humboldt, especially in the parts relating to currents and counter-currents, and the recognition of difference of density caused by change of temperature as the cause of motion of large bodies of air and water.

TENERIFFE AND ITS WONDERS—THE PEAK—DRAGON-TREE OF OROTAVA.

Fortune favored the travelers. England and Spain were at that time at war; but no British cruiser fell in with the good ship *Pizarro;* and Teneriffe, and afterwards Cumana, on the American coast, were reached in safety. The aspect of the famous island drew from the geological knowledge of Humboldt some interesting remarks on the difference in the appearance of organic and inorganic nature, of the earth itself, and of the plants and animals with which it is covered in different parts of the world. Animal and vegatable types, he observes, are distributed in bands or zones across the earth's surface; the palm trees and arborescent ferns and grasses being characteristic of inter-tropical, as the acicular-leaved trees, the pine and fir tribe, are of the colder regions; but the inorganic crust of the earth has the same features everywhere, The different masses of rock, granitic, basaltic, cretaceous, and the rest, appear under the same aspect in all latitudes; and the mariner approaching an unknown coast frequently recognizes in its structure the familiar

appearance of the rock systems he has been accustomed to see in his native land.

The ascent of the Peak of Teneriffe drew the attention of Humboldt and his compainion to a great point, which continued to be one of the chief-subjects of the investigations of Humboldt during many years, and which he treated with wonderful clearness and force in a treatise on the structure and action of volcanoes in various parts of the world. The more he traveled, the more his opportunities were multiplied of comparing the dimensions and general features of what are popularly known as "burning mountains," the more was he impressed with the imperfect nature of the information till then obtained on the subject of volcanic action, and with the fallacy of the method adopted by the scientific men of his time, who almost invariably generalized on incomplete data, and drew conclusions from too narrow premises. Vesuvius and Ætna, he said, had generally been accepted as representing the sole existent form of volcanoes,—conical mountains with large craters; whereas the mountains that may justly be included in the category are as varied in form and appearance as the manifestations of volcanic action itself. He draws attention to the stupendous extent of volcanic action in an earlier period of our planet's existence, the tremendous outbreaks that heaved up the huge Andes range from beneath the surface of the earth; and aptly illustrates the fallacious conception that identifies volcanic action with low conical mountains alone, by the classical tale of the Italian peasant of ancient times, who fancied he saw in his little village the outlines and dimensions of imperial Rome. A few restricted phenomena can never be a safe basis for general conclusions. "To raise ourselves to geological conceptions worthy of the greatness of nature," he says, "we must set aside the idea that all volcanoes are formed after the models of Vesuvius, Stromboli, and Ætna." He also points out that the peak once an active volcano, and now in the condition of a solfatara, or one with a burnt-out crater, may some day burst forth again in eruption, as Vesuvius did on the occasion of the destruction of Pompeii and Herculaneum, A.D. 79, after remaining during a long period quiescent.

Humboldt and Bonpland took advantage of their short stay at Teneriffe to visit and measure one of the most remarkable trees in the world, the famous dragon-tree of Orotava. Judging by the small increase in the size of this tree in the course of centuries, and comparing its dimensions with those of the young dragon-trees that surround it, Humboldt assigns to it a vast age. It is just mentioned by the voyagers, the Bethencourts, who visited Teneriffe in 1402, and appears to have been worshipped as a sacred tree by the Guanches, the original inhabitants of the island, as the ash-tree of Ephesus was by the Greeks, the sacred banyan-tree in Ceylon, or the Lydian plane-tree which Xerxes decked with trophies. This visit to the dragon-tree of Oratava was afterwards the occasion of an interesting series of observations on the age of trees. Humboldt says that Decandolle, the naturalist, judging by the rings formed in successive years under the bark of the trunk assigns to the celebrated yew-tree in the village of Braborne in Kent an age of three thousand years, and to the Scotch yew of Portugal, twenty-five or twenty-six centuries; while the celebrated rose-tree, in the ruins of the crypt of the cathedral

of Hildesheim in Germany, has an ascertained age of a thousand years. The cathedral was founded by Louis the Pious, the son and successor of Charlemagne; Louis died in 840; and that this rose-tree was planted at the foundation of the cathedral is attested by a document of the eleventh century, which records how, on the rebuilding of the cathedral, the rose-tree of good King Louis was preserved, and its branches spread out over the walls of the crypt. At Ripon in Kent, and Crowhurst in Surry, are also trees of an estimated age of from twelve to fourteen centuries.

PASSAGE TO CUMANA—VOLCANOES AND EARTHQUAKES.

On the voyage from Teneriffe to Cumana, the travelers were impressed by the first sight of the Southern Cross, rising from the bosom of the waters; and remembered how the navigators of the fifteenth century, sailing forth into unknown seas, and losing sight of the familiar constellations that had shone down upon them like the eyes of friends, were comforted when this new group arose, exhibiting the form of the sacred symbol of Christianity to cheer and encourage them on their way..... They passed near the great fucus banks, where the sea is covered with enormous lengths of sea-weed. In one case, that of the *fucus giganteus* of Forster, the stem of the weed attains a length of 800 feet. Fever broke out on board the *Pizarro* before Cumana was reached; the reasons of the visitation are acutely summed up by Humboldt as overcrowding, dirt, and want of ventilation. One poor fellow died on board; another, after being bled to a state of utter exhaustion by the surgeon on board—who must have been a descendant of Dr. Sangrado, and seems to have thought the one efficacious treatment to consist in getting rid of as much vitiated blood as possible—was brought out of the fetid hole, where he had been lying with his face within ten inches of the deck, that the last sacraments of his Church might be administered. So soon as the poor wretch felt the pure air he began to mend; whereupon the medical gentleman triumphantly pointed to the efficacy of his system of bleeding, which had evidently saved the man's life.

Only eighteen months before, Cumana, the travelers' destination, had been more than half destroyed by an earthquake. The attention of Humboldt was at once drawn to a subject to which he devoted much study during a series of years, the varying frequency and violence of earthquakes in different parts of the world, and in some instances in places situated under the same latitude. He draws the great distinction between the eruptions of volcanoes and the occurrences of earthquakes, that the former are evidently independent of difference of latitude, volcanic eruptions being equally violent in mountains near the poles and and-in those under the equator; while earthquakes are almost confined to tropical regions, that of Lisbon, in 1755, being altogether an exceptional phenomenon as regards the violence of the shocks, and the area over which its influence extended; the Scottish and even the Swedish lakes being affected in their level by the disturbance of their beds. Accordingly, while he considers that earthquakes are due to causes of disturbance comparatively near the earth's surface, he declares the eruptions of volcanoes to proceed from such depths as to be entirely uninfluenced by

conditions of climate or of atmospheric temperature. He also notices the greater violence of the earthquakes where there are no volcanoes in the district; and comes to the conclusion that beneath the surface are many unfilled veins or passages, in which expansive gases accumulate, and burst forth at times through the natural chimneys or craters of the mountains; sometimes the escape of the gases and of the heated lava takes place, not through a crater, but through a fissure opening along the ridge of a mountain. In noticing the various nature or volcanic eruptions, he observes how the Spanish inhabitants of South and Central America distinguish between volcanoes "*de agua y de fuego*," water and fire volcanoes—not lava, but boiling mud being in some instances hurled into the air, as in the famous mud eruption of the Moya, by which 40,000 Indians lost their lives. This occurred in 1797. The observations of Humboldt put beyond a doubt the interesting fact of the existence of underground communication between volcanoes situated at great distances from each other; thus he points out that this great Moya eruption rook place just at a time when the volcano of Pasto, two hundred miles away, which had been throwing up a column of black smoke uninterruptedly for three months, ceased to do so, and the explosive gas found another outlet. In one instance, in South America, a volcanic outburst was preceded by an underground, rumbling noise, like the sound of artillery, that extended over a district of 35,000 square miles.

THE NEGROES OF CUMANA—LIFE IN THE CITY.

The negroes round Cumana are noticed by Humboldt as shiftless, lazy and unambitious—as negroes have ever proved themselves to be, the eulogies of enthusiastic partizans notwithstanding. The slaves were in a wretched condition, driven to their work like cattle, and utterly spiritless and wretched; the free negroes were apathetic and listless, too idle even to cultivate gardens for themselves, because they could get vegetables and fruit from Cumana in return for the fish they carried to the town for sale. An amusing account is given of a Castilian living among the negroes and mulattoes of the Araga coast, a "triton of the minnows," looking down with lofty contempt upon the savages among whom he had set up his rest. He was a shoemaker by trade, this great hidalgo, but it appeared he made little profit, for the people had an inveterate tendency to go barefoot. He received the travelers with much pomp and ceremony, presented them with a few small opaque pearls of slight value with a liberal flourish, desiring that the visit and the donation might be recorded in their diary; they promised it should be so, and kept their word, and the Castilian cobbler was cheaply immortalized.

In former times the peninsula of Araga was remarkable for a brisk trade in pearls and slaves. Among the curious customs of the people of Cumana, Humboldt notices their amphibious propensity of passing several hours daily in the waters of their river, the Manzanares. Children and grown-up folks alike are distinguished by this propensity. On moonlight nights, men would put chairs in the river and gravely proceed to smoke their cigars, sitting in the water, and hospitably invited the travelers to join them.

In visiting the Roman Catholic mission stations, Humboldt, while acknowledging warmly the kindness and hospitality extended to himself and his companion, judiciously doubts whether the system pursued, of isolating the natives, and keeping them in strict dependence, like children who must obey unconditionally, is not the surest way utterly to demoralize them. He describes the natives as generally submissive, very much afraid of the white men, whom they are anxious to propitiate, and utterly unable to do anything for themselves.

SAGACIOUS MULES—CAVERN OF CARIPE—A DANGEROUS ADVENTURE.

Here the travelers had their first experience of mountain journeying on horseback, or rather on mule-back. The initiation was useful, as a prelude to the experiences of travel among the mighty Cordilleries of the Andes. The sagacity of the mules excited the admiration of the travelers, who found it uniformly the best way to leave their four-footed bearer to his own resources, and trust him to bring them safely through all perils. In his personal narrative, our traveler says: 'It is on the frightful roads of the Andes, during journeys of six or seven months, across mountains furrowed by torrents, that the intelligence of horses and beasts of burden displays itself in an astonishing manner. Thus, the mountaineers are accustomed to say: 'I will not give you the mule whose step is easiest, but him who reasons best (*le mas racional*).' This popular saying, dictated by long experience, perhaps better combats the saying that makes animals mere living machines, than all the arguments of speculative philosophy."

Among the remarkable localities near Cumana, visited by the travelers, was the Cavern of Caripe, a dark cave of unknown dimensions, the object of superstitious fear with the Indians, who declare it to be haunted by the spirits of the dead, as it certainly is by strange birds called guacheros, that live in the darkness, uttering wailing cries, and moving heavily to and fro in their dark domain.

Humboldt makes a whimsical observation concerning the apes of these regions. He declares that in proportion as these animals get to resemble human beings more closely in their appearance, they lose their natural liveliness and Simian activity, and acquire a melancholy and careworn look, their cheerfulness seeming to diminish in proportion to the apparent increase of their reasoning powers.

The second residence of the travelers at Cumana produced a startling incident, which might have given their scientific career as sudden and tragic a termination as that of Captain Cook. On the 27th of October, 1799, as they were walking at evening on the margin of the gulf, there rushed suddenly from a neighboring thicket a half-naked colored man, or "Sambo," a half-breed between Indian and negro. This wretched native, who had it appeared been driven half-mad by ill treatment on board ship, and who, hearing the two friends speak French, mistook them for a couple of his oppressors, aimed a tremendous blow with a heavy club at Humboldt, who fortunately avoided it, and then struck Bonpland to the ground, stunned and bleeding, and endeavored to follow up the attack with a long knife. Hereupon he fled, but was cap-

tured by some merchants who had seen the occurrence at a distance, and came running up to the rescue. Fortunately for the travelers, the miserable Sambo escaped from the prison where he had been laid by the heels to await his first examination. The stream of justice flowed very tardily in those regions, and the travelers might have been detained for many months to give evidence against the poor wretch. Bonpland felt the effects of the assault for some time.

His companion utilized the time occupied by his friend's recovery for the observation of an eclipse of the sun. Never, indeed, was a more active and indefatigable searcher into the secrets of nature than Alexander von Humboldt. His constitution, originally weak, had been fortified by exercise, temperance, and the cheerfulness engendered by an engrossing and congenial pursuit. He had the faculty, like Napoleon, of sleeping almost at will, and a short repose sufficed him. The amount of actual work, in the way of observation and carefully conducted experiments, he went through during this journey, and, indeed, throughout every part of his career, is amazing. And here is one of the chief causes of the great value of the results he achieved for science. He gives, as it were, chapter and verse for every assertion he makes; nothing is hurried, nothing left incomplete, nothing accepted on hearsay. Step by step the great votary of natural science clears his path as he marches onward, wresting one secret after another from nature, and enriching the world with knowledge.

AN EARTHQUAKE—ASCENT OF THE SILLA.

The travelers now had occasion to make acquaintance with a somewhat startling incident of tropical life—an earthquake; and Humboldt graphically describes the impression made upon him when for the first time he felt the earth, naturally associated with the idea of firmness and stability, trembling beneath him. Afterwards during their residence at Quito, when from the great volcano of Pichinscha came the "formidas" or internal rumblings, the precursors of heavy earthquake shocks, lasting eight or nine minutes, they had become so accustomed to the phenomenon that they did not even rise from their beds; and at last were no more astonished at seeing the earth heaving around them than the sailor is to see the ocean rising in billowy waves. He was told that 1784 had been a year especially fertile in earthquake shocks; the Mexicans at that time had been as much accustomed to hear the subterranean thunder rolling beneath their feet as at others to hear it rumbling through the air.

At Caracas, whither they had proceeded soon after, Humboldt and Bonpland ascended a remarkable mountain, the Silla, or Saddle mountain, in the neighborhood of the city. The energy of Humboldt is shown in the fact that though he had spent the whole of the previous night in watching occulations of the satellites of Jupiter, he started at five in the morning on this expedition. Some inhabitants of Caracas who set off to take part in the expedition soon turned back; among others, a young Capuchin monk, of whom Humboldt gives an amausing account. This amateur explorer boasted of the great things he would do; but very soon sat down, almost at the foot of the mountain, and watched the ascent of the climbing party with his telescope.

THE LLANOS OF THE ORINOCO.

No part of this eventful journey is more interesting than the expedition now undertaken by the travelers across the vast steepe or plain that stretches to the south, behind Caracas, towards the mighty Orinoco and the great rivers its tributaries. At that time these regions were completely a *terra incognita* even to the scientific world; nothing was known of these vast equatorial regions of America beyond the coast line, and Humboldt's account reads almost like an account in a fairy tale. To him the vast treeless plains stretching away at a dead level to the horizon, with only banks or ridges of floetz rising here and there above the uniformity of the surface, suggested the idea of a petrified ocean: but like the ocean it is far from being devoid of life. The steppes or llanos are inhabited by wild animals of the most different kinds,—striped viverœ or bats, the armadillo, the maneless lion, the jaguar or American tiger, whose strength enables it to drag to the summit of a hill the body of a bull it has killed. Enormous herds of cattle roam, almost wild, over the llanos; and Humboldt calls attention to the wonderful adaptability displayed by the ox and horse tribe to various conditions of climate and vicissitudes of circumstances; an adaptability also possessed in the vegetable world by the cereals or corn plants. The animals and plants, he observes, that are most necessary to the comfort and well being of man, appear to have followed him over the face of the globe, and to flourish and increase wherever he can make his dwelling; on the bleak hills of Norway and on the burning plains of India alike they find subsistence; and from the hardy rye to the lordly maize every zone of the earth's surface produces a corn plant of one kind or another.

In the llanos the cattle struggle on against difficulties and dangers of the most opposite kinds. The drought of summer converts the plains into arid deserts, and numbers of creatures perish for want of water. The cunning mule obtains a supply from the melocactus, a globular plant covered with thorny spikes, and containing a watery pulp. Many mules are seen lamed from thorns in the feet by kicking these plants open. The suffering endured by the animals when the rivers have become dry watercourses, are pitable, the stings of myriads of insects greatly increasing them. Then comes the wet season, and the whole region is converted into a swamp, with great lakes, from which the higher portions stand out in the form of islands. Then the cattle have to live like amphibious animals, swimming from island to island, and menaced by alligators and jaguars, while the formidable gymnotus, or electric eel, lurking in the water, destroys many of them, stunning or numbing them with repeated shocks. In no part of the world does nature appear in more wonderful diversity of climate, or exhibit a greater and more marvellous fullness of animal life, than in these vast llanos of Venezula.

LIFE OF ANIMALS IN THE FOREST—ASCENT OF CHIMBORAZO—RETURN.

During a long journey by water in native canoes, the travelers penetrated to the frontier settlement by the Spaniards on the Rio Negro, in the south. Returning by the Casiquiare into the Orinoco,

the connection of the latter great river with the mighty Maranon, the Amazon river, was established as a geological fact. The wondrous wealth of animal and vegetable life in the primeval forests, where climbing plants of lianas, of more than a hundred feet in length, stretched from one colossal tree to another, like the tackle of a ship; the generally impenetrable thicket, with paths broken through it only here and there by the animals coming down to the river to drink, in such numbers and variety that one of the boatmen, who had learnt biblical history at one of the Spanish mission stations declared, "It is here as in Paradise,"—the noctural noise and confusion occasioned by the beasts of prey hunting through the trees—with all the other experiences of that remarkable journey in regions where the foot of civilized man had never yet trod,—all these things are to be found described in clear yet eloquent language, in the "Personal Narrative" and the "Aspects of Nature," in which latter work the author presented for the benefit of the reading public some of the most striking scenes of his wanderings.

The ascent of the mighty Cordilleras, of the Andes, including that of the mighty Chimborazo, the Snow Mountain, which Humboldt was the first to climb, formed another part of the enterprising traveler's experience, and here he noticed the wonderful diversity of plant life under the same parallel of latitude at different elevations above the sea level. From the hot valleys, where the vegetation is entirely tropical, as the traveler ascends to the higher regions, he passes by regular gradations, through districts exhibiting in a series the plants first of the temperate and then of the cold regions; at length arriving at the heights where a few linchens and mosses are the last representatives of the vegetable world before he reaches the region of perpetual snow. The remarkable distribution of animals also excited his wonder—the highest peaks of the Andes and the depths of hot springs alike exhibited traces of animal life in various forms. The plan of the journey in South America, and afterwards in Mexico was several times altered in consequence of rumors, which always turned out delusory, that Baudin's expedition was expected to arrive in one port or another. After pursuing this scientific will-o'-the-wisp for a long period, to his great detriment in loss of time and temper, Humboldt at length wisely determined to give up the idea of joining Baudin altogether, and finish his journey independently as he had begun it. The great enterprise was not concluded until 1804, and never had a journey enriched science with such vast and varied results —geology, botany, ethnology, electric and meteorological science, physical geography, astronomy—there was not a department in which this admirable Crichton of science did not show himself an admirable proficient and a patient, persevering, and reverend investigator. When at length, in August 1804, he landed at Bordeaux, on his return, he had to contradict by his presence a report that he had died of yellow fever at Vera Cruz.

SPLENDID EDITION OF HUMBOLDT'S TRAVELS.

The only continental city where at that time the resources could be found adequate tn the publication, in a worthy form, of the account of

these travels was Paris; for the other capitals of continental Europe were agitated by the turmoil of war, and the fears of invasion. Humboldt accordingly conceived the idea of establishing his residence in the French metropolis. After an excursion into Italy for scientific purposes, and a visit to Berlin, which capital he found in the possession of the French, he carried this design into effect; and until 1827, he resided mostly in Paris, occupied in the task of preparing for the press, revising and publishing the account of his travels. Humboldt was a man to whom money was valuable only in so far as he found it neceessary for carrying out his scientific designs. At the very outset he had, as we have seen, sold his landed property to provide funds for his travels; and now he devoted the remainder of his fortune to the expenses of publishing in twenty nine volumes, some written in French, others in Latin, a splendid collection of narratives, treatises and notes, embodying the results of his travels and researches in the New World. The work was enriched with more than fourteen hundred engravings, many of them colored; and the expense, from first to last, amounted to £45,000; for wonderful as was Humboldt's energy, and indefatigable as he showed himself as a worker, it would have required the hundred hands of Briareus to execute even the mechanical part of the gigantic task; and the author was obliged to enlist the assistance of eminent men like Cuvier, Bonpland, Latreille and Kunth in the botanical, analytical and other departments. And in carrying out this work, priceless in its importance to science, he received no kind of assistance from his own or any other European Government.

He had his reward, however, in the consciousness of having given an entirely new impulse to scientific study and exploration. It is not alone what he achieved, but what he taught others to achieve, that renders this work of Humboldt a magnificent success. Other travelers had investigated each separate department of science; he combined his teaching to one great complete result.

"All are but parts of one harmonious whole,"

is the truth he inculcates and exhibits in all his explanations of the separate phenomena and operations of natural forces; it was the task of his life to investigate and exhibit, not natural history, but the history of nature.

VARIETY AND EXTENT OF HUMBOLDT'S WORK—TARDY APPRECIATION BY HIS GOVERNMENT.

Among the books published in the period of his residence in Paris are: "Voyage aux Regions Equinoxiales du Nouveau Continent," with a splendid atlas; the "Ansichten der Natur," views or aspects of nature, in which the till then dry and unattractive subjects of physical geography, geognosy, and the history of plants are popularized in such a way that the least scientific reader is charmed into interest, and awakened to the marvels of the animal and plant world:

"Finding therein no little delectation,
To think how strange, how wonderful they be;"

the "Essai Politique sur le Royaume de la Novelle Espagne," wherein

he gives practical advice and hints of great value concerning the cultivation of useful plants, and the revenue to be thence derived—the first practical lessons in the political economy of agriculture offered to those fertile, but ill-governed regions. Then come the splendid botanical works, wherein he classes plants, not according to the arbitrary Linnæan system, but with reference to their general features and habitat, dividing them rationally and scientifically into those of tropical, temperate and cold regions. The system of using the chronometer for the determination of longitude, and of the measurement of the height of mountains by the sinking of the mercury in the barometer, also arose from his fertile brain. Amid all his multifarious occupations, he still found time to work for the political benefit of his country, and his political acumen was highly valued by the reigning house of Prussia; as is shown by the fact of his accompanying Prince William on a difficult diplomatic mission in 1807, his arrival in London as the companion and friend of the King of Prussia in 1814, and afterwards by his presence as the representative of his country at the congresses of Aix-la-Chapelle and Verona.

The world-wide reputation of his works, and the reverence with which his name was uttered by every mouth, awoke that portion of the world in which a prophet has proverbially the least chance of finding honor—his own country— to a sense of his worth; King Frederick William III. of Prussia became somewhat tardily impressed with the idea that so illustrious a subject of Prussia ought not to be living among strangers, and pressed the philosopher to take up his residence at Berlin, which Humboldt accordingly did in the year 1827.

His elder brother William rejoiced, and with good reason, at this return of the traveler to his native land. "Alexander is here," he writes jubilantly to his friend Gentz, on the 21st of May, 1827, "and has regularly established his residence here—he is more industrious and livelier than ever.

SCIENCE POPULARIZED—HUMBOLDT'S LECTURES.

The whole of Germany had reason to remember the year 1827 as a remarkable epoch,—as the time when science was for the first time popularized before a German audience; and the result of long years of unwearied labor and research was presented to the public in a series of lectures, so admirably lucid, and yet so solidly wise—so attractive in the playful fancy which enlivened the delivery, and yet so closely logical and convincing in their arguments,—that the capital was fairly taken by storm, and many a man dated the opening of a new world of wonder and enchantment to his mental ken from the day when he heard the quiet, modest, and good-humored voice of Alexander von Humboldt in the hall of the Academy of Sciences. The subject of his series of lectures, that occupied six months, was the physical description of the world. Crowded and enthusiastic audiences filled the hall; and the enforced exclusion of hundreds for want of room occasioned a pressing petition for a repetition of the course in the great hall of the Singing Academy of Berlin. The King, accompanied by the royal family and some members of the Court, came regularly to hear the wonders of creation expounded by the traveler; and what was even more gratifying to

the man who had labored so long to spread knowledge among the community generally, the people came thronging to learn from him what a marvelous world it was in which they lived, and how the earth, like the heavens, declares the glory of the Creator,—how the mountains and the plains, equally with the firmament, show his handiwork; how day unto day uttereth speech, and night unto night showeth knowledge. These lectures were a public recognition of the fact that knowledge was no longer to be the heritage of an exclusive and privileged caste, but like the glorious sunlight was to shine on all alike who would come forth to rejoice in its rays.

THE EMPEROR NICHOLAS AND HUMBOLDT.

And now, when he had almost entered upon his sixtieth year, the grand old scholar prepared for a new and arduous course of travel. It was to the Ural Mountains, and thence to the vast regions of Central Asia, and the mighty range of the Altai, that his unwearied energy now led him. The occasion of this new journey was in itself a highly honorable one. The Czar Nicholas of Russia has not left behind him the kind of memory that, redolent of justice and benevolence, "smells sweet, and blossoms in the dust." We think of him generally as the stern, ambitious, unscrupulous autocrat, who closed a long reign of tyranny and repression with an unjust war, and broke his heart when the failure and destruction of his hosts in the Crimea brought home to his proud spirit the lesson that the glories of even an emperor's birth and state "are shadows, not substantial things," and that the best-laid plans of aggrandizement may collapse in sudden and overwhelming ruin. It is only just, on the other hand, that he should have all credit for the enlightenment and largeness of view he showed on certain occasions, and never were these qualities more advantageously exhibited than when, in 1828, he made a proposition that Humboldt should undertake a comprehensive journey through his empire, at the sole expense of the Russian Crown; any idea of advantage that his government might reap from the investigations of the distinguished traveler, with respect to mining and other national industries, to be rigidly subordinated to the interests and advancement of science, which were to be regarded as the first and chief object of the expedition. Humboldt was not the man to refuse an offer so congenial to his tastes and wishes; but it speaks well for his patriotism that his acceptance was coupled with the condition that the journey should be delayed until the spring of the next year. He had yet to finish the course of lectures promised to his own countrymen; and in the autumn he felt called upon to preside at the annual meeting of German naturalists and professors of medicine, which was this year to be held at Berlin. This and other duties to his own people being rigidly and punctually fulfilled, in the spring of 1839 he set forth on his Asiatic travels.

HUMBOLDT'S JOURNEY INTO CENTRAL ASIA.

In this second great journey Humboldt was accompanied by two most efficient coadjutors, Gustav Rose and Ehrenberg. The former under-

took to conduct the chemical mineralogical analysis, and to keep the scientific diary of the expedition: while the zoological and botanical department was entrusted to Ehrenberg. Humboldt himself was fully occupied with observations on the magnetism of the earth, and with astronomical geography, and the general investigation of the geognostic and physical features of North-western Asia.

The orders of the Czar naturally procured for the travelers every possible assistance and protection in their arduous undertaking that the word of an autocrat can give. A mining official of high position was commissioned to accompany them everywhere, and assist them with his local knowledge, besides seeing that the authorites in the various towns furnished all necessary supplies; and thus equipped, and provided with all that imperial hospitality and patronage could afford, they quitted St. Petersburg on the 20th of May, to make their way to Moscow over the Ural range. In his investigation of the nature and features of this great mountain chain, Humboldt was frequently reminded of his experience among the Andes many years before; especially he remarks on the similiarity in the direction of the chain, parallel with a meridian, from the pole towards the equator. After a visit to the malachite quarries of Zumeschefskoi, the travelers continued their journey by way of Ikaterinenborg and Tobolsk into the heart of Asia, passing over the terrible Borabinsky steepe, formidable for the myriads of stinging insects that infest it, and accordingly avoided by the inhabitants of the country around, who seldom, unless urged by necessity, venture into its precincts. But in the cause of science Humboldt encountered the dangers and discomforts of the Borabinsky plain, as he had faced the perils of the steppes of the Orinoco. He made his way to the banks of the Obi river, and on the 17th of August reached what he considered the exact central point of Asia, to the north of Lake Osaisang. He returned by way of Astrakan to the bank of the Volga and the Caspian, and so back to Moscow and St. Petersburg.

RESULTS OF THE ASIATIC JOURNEY.

The energy and activity displayed by Humboldt, who was now sixty years old, during this remarkable journey, are sufficiently attested by the fact that within the short period of eight months and a half he had traversed by land a distance of more than eleven thousand geographical miles or nearly half the extent of the earth's surface measured round the equator. By the end of September he was back again in St. Petersburg, having completed one of the most remarkable land-journeys of modern times. The distance traversed, though in itself remarkable, was the least salient feature of the achievement; the chief wonder lay in the enormous mass of scientific material, in the number of observations and notes on geology, mineralogy, and physical geography, collected by this indefatigable searcher into the secrets of nature, at a time of life when the energies of the majority of men have begun to diminish, and they are prone to look forward to rest, rather than to increased exertion.

THE ONE TRIAL OF HUMBOLT'S LIFE.

The reputation of the great man of science in his own country was increased by every new work that poured from his prolific pen. After the death of Frederick William III., that monarch's successor, the late King Frederick William IV., continued to treat the now aged philosopher with marked distinction, and at various times employed him on diplomatic missions of honor and importance, especially to Paris. The King took especial pleasure in Humboldt's society, and chose him as a traveling companion on his visit to England in 1814, and to Denmark in 1845. Amid all the honor and respect of this later period of Humboldt's life, there was one exceedingly black spot, which the sage was compelled perforce to contemplate from time to time,—a bitter drop in the cup of his life, which interfered most unfortunately with the flavor of the draught. Thackeray somewhere relates how once, when a housekeeper had shown and expounded to him all the glories of a grand country house, he turned upon the stately dame, after the treasures of various cupboards and cabinets had been displayed and admired, and utterly put her out of countenance with the startling question: "And pray, ma'am, where do you keep *the skeleton?*" There was a skeleton in Humboldt's cupboard that occasionally thrust itself forth amid all the satisfactions and all the useful labors of his distinguished life, and would not be banished. This skeleton was Debt. Though, at the outset of his career, Humboldt had inherited a considerable fortune, that fortune had been entirely absorbed in the expenses of his travels and of his publications, in which he spared no cost, his one object being to obtain the utmost completeness, especially in illustrations. For him money had no value apart from his scientific pursuits, and in distributing to the necessities of others he was generous to a fault. In his latter days, accordingly, he found to his dismay that his fortune had not only melted away completely, but that the pension awarded to him by Frederick William III., and continued by the king's successor, was all he had left for his maintenance. It was insufficient; for he was careless of his affairs, and benevolent to a fault, easily imposed on by a fictitious tale of distress, and unable to answer an application with a refusal. Thus his embarrassment increased, and were a source of annoyance to him almost to the end of his long life. It was the brother of the king, afterwards Emperor of North Germany, who, during the time he acted as Regent, relieved the illustrious old man of the load of debt that had long weighed upon him. His activity continued undiminished, and long after he had passed his seventieth year his correspondence amounted to between three and four thousand letters annually.

"COSMOS"—A GREAT END TO A GREAT CAREER.

Finis coronat opus; the greatest triumph of his scientific career was still to be achieved in the form of a book that to a certain extent embodied and summed up the experiences of his long and eminently useful life. This work was his magnificent "Cosmos;" and was left as a leg-

acy in the first instance to his German fellow-countrymen, and then to all searchers after knowledge in every civilized country in the world. In the preface the venerable author tells his readers that the design had been present for nearly fifty years in his mind before it found definite expression in this book. The Greek word Cosmos indicates the scope and intention of the work. The design is to exhibit, as he expressed it, "the appearance of corporeal things in their relation to each other, for the comprehension of nature as a whole, anaimated by inner forces." The idea of the universe as exhibiting in its highest development the perfection of order, beauty, and harmony is carried out with wonderful completeness in the "Cosmos," a worthy conclusion to a splendid and glorious life-work. The task of uniting the various branches of scientific knowledge, before isolated and separate, into an orderly and systematic whole, was a gigantic effort for a veteran; but Humboldt achieved it in a most satisfactory manner. It was not until 1854 that the concluding volume appeared; and the author was eighty-five years old, when at length he laid down his pen, and felt that his life's work was done. To the last he was a student, anxiously comparing, enquiring, adding fact to fact, and conscious that the scientist, like every other searcher after truth, after all only "sees through a glass darkly." It is touching to note the modesty with which he spoke and wrote of himself and his attainments, while all Europe was ringing with his praise, extolling what he had done, and holding him up as the model of a votary of science. "I am at once surprised and flattered," he writes to a London publisher in 1851, in reply to a letter proposing an English version of the "Cosmos," "at the interest evinced in your wortny and intelligent country for the last work of my late age;" and in answer to a respectful request that he would indicate another work suitable for the general public, in an English dress, he good-humoredly observes that authors are not good people to consult on such a subject; but suggests that the "Ansichten der Natur" has been popular in Germany, and might achieve success in England also; but he gives his suggestion with a diffidence exceedingly graceful in one who had done so much, and held such a position as he could command in the dominion of scientific knowledge.

DEATH OF HUMBOLDT—SPECIMEN OF HIS STYLE.

At the age of ninety years, full of days and honors, Alexander von Humboldt was laid at last in the grave of his family at Tegel, on the 11th of May, 1859. He was never married. The chief possession he left behind him, his valuable library, he had bequeathed to his faithful servant, assistant, and friend, Seiffert, the companion of his travels. It was afterwards removed to America.

The following extract, descriptive of the great treelees llanos or steepe of Venezuela, is taken from the "Aspects of Nature." It will give an idea of the author's picturesque style in the description of natural scenes:

"Separated by days' journeys from each other, huts are found, constructed of bundles of reeds bound together with thongs, and roofed

with ox hides. Countless herds of wild cattle, horses, and mules swarm in the steppes. Forests, thousands of years old, and an impenetrable gloom cover the moist region that surrounds the desert; and mighty granite masses narrow the beds of the foaming rivers. The wood resound with the thunder of falling waters, the roaring of the jaguar, and the dull howling of the apes. But when, beneath the perpendicular rays of the never-clouded sun, the burnt-up grassy surface has crumbled into dust, the hardened ground gaps open, as if shattered by a mighty earthquake; like the rushing water spouts opposing currents of air spring upward in funnel shape; a dull straw colored twilight is spread by the apparently lowering sky over the desert plain; the view suddenly narrows, and as the plain contracts, the heart of the wanderer sinks within him. The hot, dusty sand, floating in the misty veiled horizon, increases the sultriness of the pestilential air.

"As the animals in the icy north grow torpid through cold, so here the crocodile and the boa slumber motionless, buried deep in the dry clay. Everywhere drought signifies death, everywhere the thirsty creature is pursued by the delusive ærial mirage of a waving mirror of waters. With thick clouds of dust whirling around them, and tormented by burning thirst and by hunger, the horses and oxen roam to and fro, the latter with frightened roar, the former wilh outstretched necks snuffing the wind to detect, by the dampness of the current of air, the proximity of some water-puddle not yet entirely evaporated. When the burning heat of day is succeeded by the coolness of night of equal length, even then horses and oxen cannot enjoy their rest. Enormous bats suck their blood in vampire fashion, attaching themselves closely to their backs, where they cause festering wounds, into which swarms of stinging insects penetrates. When at length, after a long drought, the beneficent rainy season succeeds, the scene suddenly changes. The deep blue of the till then unclonded sky becomes at once overcast. At night the weak light in the constellation of the Southern Cross can barely be recognized. The soft phosphoric gleam of the magelanic clouds is extinguished, even the constellations of the Eagle and of Ophiucus in the zenith glimmer with a trembling light. Some scattered clouds in the south appear like distant mountains, and the vapors spread like mists over the zenith; and distant thunder announces the vivifying rain. . . . Hardly has the surface of the earth been moistened before the fragrant steppe is covered with the most various kinds of grasses. Excited by the light, herb-like mimosas unfold their slumbering leaves, and welcome the rising sun, together with the morning song of the birds and the opening blossoms of the aquatic plants. Horses and oxen now pasture in the full enjoyment of life. But in the grass that shoots up high lurks the beautifully-spotted jaguar, that springs catlike with airy bound upon the animals as the pass by. . . . . Sometimes on the margin of the swamp, the moistened clay is seen slowly rising upward in clods—with a violent noise, as at the outbreak of the little mud volcanoes, the upheaved earth is hurled high in the air ;—those who understand the meaning of it flee from the appearance, for a gigantic watersnake or a mailed crocodile comes forth from the depths, awakened from a trance

by the downpour of rain. . . . As the rivers gradually swell, nature forces the same animals that during the first half of the year were fainting with thirst on the dusty parched earth, to live like amphibious creatures—for a portion of the steppe now appears like an enormous lake. The mares take refuge with their foals on the higher banks, that stand forth like islands above the mirror of waters. Every day the dry space becomes narrower. For want of pasture the crowded animals have to swim about for hours together, cropping a bare subsistence from the blossoming grass that rises above the brown colored turbid water. Many foals are drowned; many are caught by the crocodiles, crushed by the pointed teeth, and then devoured. Not unfrequently horses and oxen are seen that have escaped from the jaws of these rapacious lizards, and still carry on their bodies scars from crocodiles' jagged fangs.

"But as in these steppes tigers and crocodiles fight with horses and oxen, so in certain parts of this wilderness we likewise see man in continual combat against his fellow. With unnatural greed, the tribes drink the blood of their enemies—others, apparently weaponless, yet equipped for murder, slay their foe with a poisoned thumb-nail. The weaker hordes, when they pass along the sandy shore, carefully with their hands efface the marks of their timid footsteps, to conceal them from the stronger tribes. Thus man, in the lowest state of brutal savagery, as in the fictitious glory of higher civilization, everywhere prepares unrest for himself in life—thus the wanderer in distant regions, crossing land and ocean, like the historical investigator searching the records of the ages, everywhere encounters the lamentable spectacle of a race divided against itself. And, therefore, he who amid the yet unsettled strife of nations longs for spiritual repose, gladly casts down his eyes to contemplate the peaceful life of plants, and the inner working of the holy power of nature;—or, following the innate impulse that has glowed for centuries in the human heart, he fixes his gaze upwards, on the distant stars that in undisturbed harmony sweep onward in their ancient unchanging course."

The following is Humboldt's picture of the nocturnal life of animals on the banks of the great rivers of South America:

"Below the mission of Santa Barbara de Arichuna we passed the night, as usual, in the open air, on a sandy flat on the bank of the Apure, skirted by the impenetrable forest. We had some difficulty in finding dry wood to kindle the fires with which it is here customary to surround the bivouac as a safeguard against the attacks of the jaguar. The air was bland and soft, and the moon shone brightly. Several crocodiles approached the bank, and I have observed that fire attracts these creatures, as it does our crabs and other aquatic animals. The oars of our boats were fixed in the ground to support our hammocks. Deep stillness prevailed, only broken at intervals by the blowing of the fresh-water dolphins, which are peculiar to the river network of the Orinoco, as, according to Colebrooke, they are also to the Ganges, as high up the river as Benares; they followed each other in long rows.

"After eleven o'clock, such a noise began in the adjacent forest that for the remainder of the night sleep was impossible. The wild cries of

animals resounded through the woods. Among the many voices which echoed together, the Indians could only recognize those which, after short pauses, were heard singly. There was the plaintive, monotonous cry of the howling monkeys, the whining flexible notes of the little sapagous, the grunting murmur of the striped nocturnal ape, the fitful roar of the great tiger (jaguar), the cougar, or maneless American lion, the peccary, the sloth, and a host of parrots, parraquas, and other birds of the pheasant kind. Whenever the tigers approached the edge of the forest, our dog, which before had barked incessantly, came howling to seek protection under the hammocks. Sometimes the cry of the tiger resounded from the branches of a tree, and it was then always accompanied by the plaintive piping tones of the apes, which were endeavoring to escape from the unwonted pursuit.

"If the Indians are asked why such a continuous noise is heard on certain nights, they answer with a smile that the animals are rejoicing in the beautiful moonlight, and celebrating the return of the full moon. To me the scene seemed rather to be owing to an accidental, long continued, and gradually-increasing conflict among the animals."

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ease,
And make despair and
madness please.
—Pope.

CONSTITUTION AND OFFICERS.

PROGRAMME FOR 1882-83.

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CLEVELAND, OHIO.

LEADER PRINT.

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Give me excess of it."—*Shakespeare.*

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1882.

GRAND CONCERT,

BY THE

Central Musical Association,

ASSISTED BY THE

PHILHARMONIC ORCHESTRA, ARION QUARTETTE,
MR. J. T. WAMELINK, and MR. N. L. GLOVER,
Conductor, PROF. N. COE STEWART,
Pianiste, MISS MINNIE S. JOHNSTON.

PROGRAMME.

PART I.

1. "Pique Dame," Overture.....SUPPE
   Philharmonic Orchestra.
2. Pilgrim Chorus, (ILombardi).....VERDI
   Central Musical Association and Philharmonic Orchestra.
3. O! How I shall Triumph, (From Seraglio).....MOZART
   Mr. Cahill.
4. The Carnival.....ROSSINI
   Central Musical Association and Philharmonic Orchestra.
5. She Wandered Down the Mountain Side.....CLAY
   Mrs. N. Coe Stewart.
6. Waltz Song.....ABT
   Arion Quartette.
   J. F. Isham, C. S. Jaster. J. B. Lang, G. D. Duckett.
7. Rigoletto (Piano Solo.).....VERDI—LISZT
   Miss Minnie S. Johnston.
8. All Hail! Liberty's Chieftain, (Masanielo).....AUBER
   Central Musical Association and Philharmonic Orchestra.

PART II.

1. Honor and Arms, (Samson).....HANDEL
   Mr. N. L. Glover.
2. Over Hill, Over Dale.....HATTON
   Central Musical Association and Philharmonic Orchestra.
3. Les Folies Polka, (Cornet Solo).....WALDTEUFEL
   Mr. C. W. Coffin and Orchestra.
4. The Watcher.....GEIBEL
   Mr. J. T. Wamelink.
5. { *a*) Three Chafers.....THUHN
   { *b*) More and More.....SIEBERT
   Arion Quartette.
6. Le Berceuse—Waltz.....WALDTEUFEL
   Philharmonic Orchestra.
7. Honor to the Soldiers, (Faust).....GOUNOD
   Central Musical Association and Philharmonic Orchestra.

The Henry F. Miller Grand Piano used on this occasion is kindly furnished by Mr. J. T. Wamelink, 376 Superior Street.

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COMPILED BY

F. T. WALLACE, ESQ.,

AUTHOR OF "MUSIC AND ITS INFLUENCES," BOOK NO. I.

GEORGE FREDERICK HANDEL.

On the 23rd day of February, 1685, there was born in the City of Halle, Saxony, a boy, who was, according to the custom of those days, taken the next day to Church and christened George Frederick Handel. His father, Dr. Handel, was a surgeon, and in comfortable circumstances—a man of no particular note, whose name would have slipped from men's minds, had it not been for this remarkable child of his.

Most children, who are destined to do or be something great when they grow up, show marked signs of their future in infancy or early childhood. The boy artist West wants to make a paint brush out of the cat's tail, and steal his little brother's face and put it on paper. The child Mozart seeks, with baby fingers, for harmonies on a key-board. The sturdy little Handel began to make tones in his cradle, and sang before he could talk. His poor father was mortified and perplexed at such an exhibition of juvenile depravity. "Music," said he, in the formal style of those days, "is an elegant art, and a fine amusement; yet, if considered as an occupation, it has little dignity, as having for its subject nothing better than mere pleasure and entertainment." Just as if music and art were not the best gifts with which God had blessed his children!

With shame and surprise the worthy doctor saw the child rise from babyhood to boyhood with the musical propensity alarmingly developed. But it must be crushed. It would never do to have a child grow up into so disagreeable a thing as a musician. The child must never be taken to any public place of amusement, as there he would hear music. Church was not to be thought of for a moment—there were the organ and choir. He must not attend the public schools, as every child there was taught to read notes as well as letters, to sing from the tune-book as well as read from the Bible. Musical instruments of every kind were banished from the house, and the boy's education was carried on under his father's roof. But alas for the doctor, the brave little fellow knew he

was right. Nature had put music into his heart, and it would break out through fingers and tongue. In those days they had a curious musical instrument, called a dumb spinet, in shape like a small piano, having keys, but with the strings wound with cloth, so that when it was played upon, only a dull, muffled tone was produced. They were made for musical nuns, who, weary of the monotonous quiet of Convent life, wanted to have a little music without disturbing the lady superiors. The dumb spinet answered their purpose, and young Handel's also. With the aid of his mother or nurse, he contrived to smuggle one of the instruments into the attic. When all the house were fast asleep, the child arose and stole away to his beloved spinet, to hear its muffled notes and study music alone and unaided. By the light of a solitary candle he practiced his little fingers in such simple harmony as he could pick out. In some curious fashion he did, in time, acquire a command over the keys, and at seven years old found he could play the spinet.

His father knew nothing of his son's new accomplishment—or defect, as he fancied it—until one day he started on a journey to visit another son. This son was not an own brother to George, and he had never seen him. The brother was in the employ of the Duke of Sax-Wiesenfield, and in some way the boy had found out that there was much music to be heard in the duke's house. Naturally he guessed that if he could get there he could hear some of it. Permission to go with his father was asked, and refused. Nothing daunted, the little fellow resolved to go without permission. Waiting quietly about till the coach started, he set out and followed it on foot. To hear the duke's organ was the desire of his heart, and he was determined to go if he had to walk all the way. His father saw him, stopped the coach, and began to scold. Little did the child care for that. Boldly repeating his request to be taken upon the journey, he urged and entreated with that persistance which so strongly marked his after life. At last his unwilling father took him in, and the journey was resumed.

When the party reached the duke's palace, the child ran away—where, nobody knew. Yet, if they had searched the dusty organ loft, in the dim little chapel, they might have seen a small boy staring with big eyes at the organ. There was some kind of service going on in the place, and for a while the child was forgotten. Soon the organist stopped and the choir went away. Then the little fellow crept softly up to the key-board, and gazed with wonder and delight upon the great yellow keys. To keep his fingers away from them was an impossibility. Though he had never touched an organ, he boldly sat down and began to play. The duke and his family pricked up their respectable ears and said, "Who's that playing upon the organ? We do not recognize the man's style." A servant was sent to bring the man down, and in a moment he returned bringing a frightened little boy. The old doctor was angry, but all the people were astonished; but the duke took the child's hand, and talked to him kindly, till he won his secret from him. The duke gave the father a good lecture for his having endeavored to stifle the genius of his son. The boy stood by, and drank in with wondering ears all that was said, and forever after regarded the duke as his great benefactor.

Returning home the boy was permitted to take music lessons of Sackau, the Cathedral organist. A very few lessons convinced the master that he had a very remarkable pupil. After instructing him in a few principles of music, he laid before the child a vast pile of music, both vocal and instrumental, and in every imaginable style. Taking up one piece at a time, master and pupil went carefully through it, both for study and practice. At nine years of age the boy was set to work upon composition, and wrote each week a piece of music upon some given subject. Nor was this all. The harpischord, violin, organ and hautboy were all taken in turn, and skill acquired in their use. At the age of eleven the master admitted that the pupil knew more than he did, and frankly advised that the boy be sent to Berlin to study other methods. The father consented, not without a sigh; for he still clung to the idea that music would one day give place to something that he imagined was more solid and dignified. He had during all this time instructed the boy in Latin, in the vain hope that some day the musician would become a lawer.

At eleven years of age the boy appears in Berlin as a musical prodigy —a very remarkable little fellow, who attracted the attention of every one by his performance on the harpischord and organ. Here to the young Handel came that strange jealousy that mars the lives of some musicians. Attilio and Bononcini, two Italian composers, lived in the city at that time. Attilio, a kind hearted man, delighted in the talents of the child, and loved to listen by the hour to his playing. Bononcini, on the other hand treated the child with contempt. He composed a piece of music for the harpsichord, stuffing it with difficulties, and then requested the boy to play it. No doubt he said to himself, "Of course the child cant't read it, and that will be the end of him." The plucky little youngster took the sheets clouded with black notes, sat down to the instrument, and played every note as written, and without mistakes. The mighty Italian was astonished, and ever after treated the child with the utmost respect and consideration, though he could not help regarding him as a rival.

During his stay in Berlin the boy had learned of his own abilities. The discovery, however, did not make him self-complacent and satisfied with his progress, but on the contrary urged him to greater industry and study. Returning home soon after, his father died, leaving him poor. Necessitated to do something to supply his daily wants, he went to Hamburg and took a humble position in the orchestra of the Opera House. During his stay he allowed himself to be considered a rural ignoramus, judging that if the opportunity occurred, he could display his talents to the greater advantage. His opportunity finally came; for one night the harpsichord was absent, and Handel took his place, playing so well that everybody was surprised and delighted. One day while at Hamburg he responded to an advertisement that an organist was wanted, and that the place was open for competition. When he arrived he found a large number of competitors. Concerning these he had no anxiety, but when he found attached to the programme a condition that the successful competitor was to marry the old organist's daughter, he did not enter upon the contest, but gaily returned home.

In 1705 young Handel produced his first opera—"Almira, Queen of Castile." The morning after, the young man awoke and found himself famous. The new opera was a success. He had written other music but this piece was the one which attracted the first public attention. He spent a year or more in Italy and then located in Hanover. George of Brunswick made him Chapel-Master in his court and in a year after went to England where operatic fame attended him. Subsequently he returned to his position at the Hanovarian Court. His triumphs in London lured him there again in 1712 when and where new music won him new fame and richer rewards. The music written for Queen Anna's birthday won him much credit and a pension of two hundred pounds. When the Queen died his old patron, Elector George of Hanover became King of England, and Handel saluted the royal barge of George on the Thames from the orchestral boat discoursing his own music composed for the occasion. He died in 1709.

BACH.

There is a queer, old-fashioned house still standing in Eisenach, Germany, where lived the parents of John Sebastian Bach, and where he was born in 1685, about a month after the birth of Handel. Of the first ten years of his life we know little or nothing. Whether he played with a dumb fiddle like the boy Haydn, or searched out chords on a key-board like the infant Mozart, or did any other remarkable thing, we know not. We learn, however, that in 1695 his father died and the boy was an orphan, his mother having died some time before his father. He was aided to some extent by his father's half brother, who did him the kindness to teach him music—to finger the keys of the tinkling clavichord. He made great proficiency and soon mastered difficult pieces of music. His uncle dying his pupilage was short and the lad found himself afloat, but casting about soon found a place as treble singer in a choir at Luneburg, not many miles from Hamburg, where he remained until his voice changed, obtaining the advantages of an excellent school and the best of musical instruction, and a small sum of money sufficient for his boyish necessities. His love of music was such that he made journeys on foot to Hamburg to hear Reinke the great organist, and to Celle to listen to the French band in the service of the prince. With the change of his voice came the loss of his place and the necessity of entering upon a new field. Like Handel, he studied the violin, and it proved a resource to him. At the age of eighteen he is found at Weimar, in the service of the court as a violinist. His great devotion, however, was to the organ, counterpoint, and composition, and before he was twenty years of age he was called to Arnstadt as an organist, and where he remained three years. In seven years service at Weimar as

court organist he won great applause for his compositions and his executions. In 1714 he became concert master to the duke, and composed and conducted the vocal music of the ducal chapel. Here he composed many of the long list of works which made him celebrated. At the age of thirty-eight, Bach, then rich in all that study of theory, hearing of the best models of his age and country, practice as member and leader of orchestras, and constant exercise in composition for church and concert room, could give, devoted himself to teaching and to the working out of his lofty conceptions of musical art. Twenty-seven years he then lived and labored, surrounded by his pupils and his large family of sons, composing music sacred and secular in all the forms then known except the opera and dramatic oratorio; and having as the fruits of those years a mass of compositions which, for number, beauty and excellence, form perhaps the most astonishing monument of musical genius and learning. He is said to have lost his eyesight in the artistic labor of engraving upon copper the works of his own pen. At the age of sixty-five an attack of apoplexy carried him to the tomb. He was twice married, and left ten sons, all of them fine musicians. This great musician never had cause of complaint of a want of due appreciation, either as composer or organist. Very soon after his establishment at Leipsic, the duke of Weissenfels conferred upon him the title of Kapellmeister, with the emoluments of the office, without requiring his personal attendance at court; and in 1736 Augustus of Saxony created him "royal Polish and Saxon electoral court composer." In 1747 Frederick the Great invited him to Prussia, and it is related that notice being given the king of his arrival in Berlin, just as a private concert in the palace was to begin, Frederick made the announcement—saying, "Gentlemen, old Bach has come!" Such are the outlines of the life of the renowned Bach.

JOSEPH HAYDN.

In the almost unknown hamlet of Rohran, a few miles from Vienna, in Austria, there once lived a poor wheelwright, named Haydn—a humble man of no peculiar mark, but possessed of the usual German passion for music. The organ was his favorite instrument, though he could play on the harp, and sing. He was sexton of the village church, and no doubt had a seat in the choir. Among the children of his household was a very small boy, called Joseph. This child was born in 1732, the year of our own Washington. He was about seven years old when we begin his story. It was the custom in his father's house to have a little family concert Sunday afternoon. The father would get out his harp, and accompany himself and wife in duet. The small, thin-faced boy sat an attentive listener at these weekly concerts during his babyhood, and until he was nearly six. His mother had a sweet, pure voice, and sang the simple, old German songs with feeling and expression. To the

boy, his mother was an angel singing heavenly airs. But to sit on the stool while his mother sang did not meet his juvenile views of music. The duet must become a trio. He, the small boy, must unite with the grown folks in the performance; he could not sing, nor even play upon anything. Two sticks, one held as a violin and the other used as a bow, made his instrument, and with this dumb music he joined in the now complete trio. Week after week the silent fiddle scraped through the music. One Sunday afternoon, a cousin of the wheelwright chanced to be present at the trio concert. He did not laugh at the child, for there was something quite wonderful about the mock violin. The time marked by the boy's wooden bow was as exact as a watch. Verily, there was music in the child.

This cousin was a musician of some merit. He suggested that the boy's talent should be cultivated, and offered to take him to his home in the village of Haimburg, and instruct him in music. The parents consented. At his cousin's house, instruction in singing, upon the violin and other instruments, and in Latin, was given to him. This cousin was far from being a pleasant man, and gave his little relative "more cuffs than gingerbread;" yet he did the boy a real kindness in the matter, and gave him the rudiments of a musical education—something his father's humble circumstances would never have enabled him to procure.

One day, the child happened to find two tamborines. By dint of repeated trials he found he could make these poor, weak instruments sing a song. Here was a discovery. He, the six-year-old child, could invent a new melody—could compose. This discovery, and the fact that nature had blessed him with a good voice, soon spread his boyish fame abroad. His style of singing in church every Sunday attracted the attention of musical people who heard him. His fame, in time, even spread to the neighboring city of Vienna.

Now, in Vienna there lived a certain organist named Reuter. He led a choir of boys in his church, and was continually on the lookout for new voices for it. Hearing of the child's performances, he came to see him, and when the boy—now eight years old—was brought in, gave him a simple tune to sing. The little Joseph sang it correctly, and the organist was greatly pleased, both with the performance and the exceeding sweetness of the voice. His only criticism was, that he did not know how to give a certain musical ornament called a shake. Joseph frankly replied that he could not be expected to do that, when "even my cousin does not know how himself." "Come here," said the organist; "I will teach you." Placing Joseph by his knees, he showed him just how to manage his voice so as to make a good shake. Like a flash the pupil grasped the whole matter, and could give a correct musical shake as well as anybody. The delighted Reuter at once took a plate of cherries from the table near by, and poured them into the boy's pocket. Nor was this his only reward. A position in the Vienna choir was offered him, and he at once left all, and set out with his new employer and friend, for fresh studies and more music.

Now begins little Joseph's life of trial, study and labor in his favorite art. Singers were obliged to rehearse two hours every day; but this did not satisfy our eight-year-old student. From fourteen to eighteen hours a day did not seem too much time to give to study. The little fellow continued to sing in the Vienna Cathedral for a long time. For years he toiled on, practicing and singing in church all day, and studying alone in the cold and darkness of his attic far into the night. With infinite pains he managed to make a series of discoveries in his art, and acquire a certain amount of knowledge. Ambition did not enter his head. He studied because he loved music, and not for any praise it might bring him.

Afterwards he made the acquaintance of one Popora, a music master and composer in the service of the ambassador from Venice. He managed to win his favor, though rather a crusty-tempered person, and got a few lessons in musical composition, learned to sing in the Italian style, and to play accompaniments. After awhile the ambassador himself noticed him, discovered his talent, and gave him a small salary and allowed him to dine with the servants. This he regarded as a promotion, and almost a state of financial independence, as it enabled him to buy a decent suit of clothes and appear in good musical society. This position he subsequently lost, the result of playing a practical joke upon one of his fellow laborers—was sent adrift into the world without money, and almost without friends. This, however, did not discourage him, for he had little thought of earning money and being independent. He fell in with a certain wig-maker, named Keller. This man had heard the young singer in the cathedral, and out of pure charity offered him board and lodgings, with care of his wardrobe rent free. Without a thought, he accepted the gift, and at once buried himself in his studies. Not long afterwards, the worthy wig maker thought he must do his fellow student more kindness, and actually offered him his daughter for a wife. He accepted the girl and happiness. He then took up composition, and composed a sonata for the harpsichord, which he published and sold. Meeting with a little success, he wrote and sold more. To amuse himself, he wrote a serenade for three instruments, which he and two friends performed in the evening, on the streets. One night the serenade was given before the house of the director of one of the theaters; in the midst of the performance the door opened and the director appeared and inquired who wrote the music. "I did," said young Haydn. "Come into the house," said the director. In he went, and in a few moments he came out with the poem of a new opera, which he was to set to music. The music was arranged in a few days, and was produced with success. In about a year, he published six trios, or pieces for three instruments. The soleman old musicians of Vienna looked at the new music, and then shook their heads at the daring young man. Nobody had ever written anything like it before, and it was a dangerous thing to compose anything new; besides, the music was full of lively melodies that defied all their rules of musical grammar; it abounded in strange chords, before unheard, and was altogether the work of a musical heretic. He must be put down. But he would not be put down; or, if he

was, he would not stay down. In utter defiance of the learned doctors of music, he went on and wrote more of his peculiar and original music. He subsequently found employment in the private orchestra of a nobleman, Count Mortzini, for which he composed symphonies Here he attracted the attention of Prince Esterhazy. He spent many years in the house of this prince. and his fame increased. In 1750, he composed his first opera, the *libretto* of which was entitled: "The Devil on Two Sticks," an opera which, on account of its satirical tendency, was forbidden after its first presentation; but which work gained Haydn a reputation, which rapidly developed until his genius was known throughout Europe. It was not until 1795 that he wrote his great work of the "Creation," when he was far advanced in life. The first representation of this wonderful work was two years later. Haydn, old and infirm, was carried in a chair to witness the performance of his beloved work. He was overcome by the grand and awe inspiring tones, and at the conclusion of the first act, it was found necessary to bear him from the concert room. Bowing to the public, and turning to the orchestra, he raised his hands, and with eyes filled with tears, called down the blessings of Heaven upon the faithful interpreters of his grandly immortal work.

MOZART.

There is something pleasant even in the name of Mozart, our celebrated music master, the son of Leopold Mozart, who lived in Salzburg, Germany, and was himself a professional musician. The Mozart, our subject, was born there in 1756, and was christened with several names of the fashion of the times, the principal by which he was generally called was Wolfgang. No other children are mentioned than one sister Mary. The son was of a nervous and delicate constitution. Mary had a taste for music and her father instructed her upon the harpsichord which was the piano of that day. During her lessons the little Wolfgang, though too young to walk or talk, became immensely interested in the music, and astonished everybody by searching over the key-board for notes a third apart. The discovery of harmony seemed to afford him the greatest delight. This precocity impressed the father that the child promised genius, and at the age of four years he began to instruct him in music. The ease with which the child mastered the exercises set before him surprised every one. Curiously the boy would not stick to his lessons, but persisted in wandering off in extemporaneous flights up and down the key-board. Noticing these efforts and carefully writing some of them out, his father was surprised to find them in accord with the best rules of musical composition. He was truly one of the sweetest and most childlike of children. Merry, active, affectionate, and frank, he charmed every one he met. Music seemed to make his whole life. The playing of instruments seemed to be born in him. He took up the violin and acquired a

command over it almost without practice. At a musical party at his father's house, one evening, the gentlemen wished to play a violin quartette, but one who was to play second violin was absent. Little Wolfgang was the happy possessor of a toy violin, and he wanted to take the vacant place in the quartette. His father laughed at him, and bade him be quiet. The boy cried. His father again bade him be quiet and not disturb the company. Nothing would do; he knew he could play, and cried the more. At last, one of the company suggested that the child be permitted to try, at least. They set the tear-stained little youngster on a high stool, put a violin in his chubby little hands, and set the music before him. The others began to play, and so did he. His small fingers could not grasp all the strings, and his way of holding the bow was very funny; but he did the work without any mistake. Of course every one was astonished, and none more so than his father, who was now convinced of his boy's great talent.

The boy was then put upon a system of education suitable to one so promising, and in the meantime the father made some journeys through the country displaying the wonderful talents of his two children. His children performed in kings' palaces and before their courts, and created astonishment without limit. Nobles, princes, and kings vied with each other in showing attention to the boy composer and performer and his wonderful sister. Presents crowded upon the lad in great profusion. But gold watches, some of which would not keep time, and swords, snuff-boxes and jewelry, the ordinary gifts of royalty to persons who are actually suffering for money, did them but little good, as propriety forbids the sale of presents. However, at ten, young Mozart could not only read and write German, French, Latin and Italian very plainly, but could compose elaborate and difficult pieces of music that, to this day, are admired by all. In the same manner as before they traveled in Northern Europe, and visited England, and returned, covered with glory to Salzburg. Study continued—composition, counterpoint, and all other strange, and to us almost incomprehensible depths of musical science seem intuitive to him. Another musical expedition was made in 1767, going to Vienna, where the boy composed and performed a German Opera. Soon afterwards young Mozart was appointed concert-master in the musical establishment of the Archbishop of Salzburg. In 1769 father and son visited Italy, the land of song. A triumph awaited the boy at every step. Concert after concert was given, and each a success. The boy's skill produced a great furore among the audiences, and superstition was awakened concerning his skill and powers. He was greatly admired by the Pope. He wrote beautiful and cheerful letters to his mother always, when absent from her, attesting the sweetness and gentleness of his youthful mind and heart. His early professional life was one of honor and fame without much money, but his latter days were not always clouded by poverty and sorrow.

He found a loving wife in Constance Weber, and nine years of married life had its abundance of mutual compensating joys. His life naturally led him into the best society which he enjoyed, and he passed through much temptation and flattery without spoiling his temper or souring his

human kindness. He had a host of brilliant contemporaries. Some time after 1780 he wrote his celebrated opera "Figaro," and made a visit to the city of Prague, where it was given with great applause, running every night during a whole winter, and until it is said, every girl thought she could sing it, every boy whistle its most taking melodies, and even the babies of Prague were lulled to sleep by Mozartian cradle songs. "The Magic Flute" is one of his best operas. Then followed "Don Giovanni" and the "Twelfth Mass," The "Requiem," so celebrated to-day, though written for another, on his own death, became pre-eminently "Mozart's Requiem."

BEETHOVEN.

A little over one hundred years ago, in the old German city of Bonn, there lived a man, poor, uneducated, and dissipated, a tenor singer in the chapel of the elector, and possessed of a slight knowledge of music, and nothing else except a family—a wife and three boys: Ludwig, Casper and Nicholas. With a harsh, irritable, and at times dissipated father, brothers far from brotherly, and with only a mother to help him, the boy Ludwig seems to have grown up neglected, poor, and generally miserable. A very ordinary school education, and a slight knowledge of music were all his father would or could give him. With rough manners, tumbled hair, fiery eyes, and ungainly form, this boy hardly resembled the afterwards mighty Beethoven. Nevertheless there was something about the child that caused people to treat him with respect, and even to offer him costly instruction without money and without price. Rough and impetuous the little fellow was endowed with a great love for music.

When the boy was only five years old he obtained some instruction on the piano. But he was stubborn and would not practice the formal lessons, but would play to suit himself. In this way his musical education did not prosper. A teacher was finally procured who was enabled to rectify the boy's habits, and to this teacher the young Beethoven owed his education, and remembering it ever after treated that teacher with kindness and respect.

Of the details of the boy's life we know but little, but at the age of fifteen he was appointed organist in the elector's chapel. New and better teachers were provided for him at the expense of the court. In 1792 young Beethoven went to Vienna. Here his youth ended. He was twenty-two—a man, and about to enter upon the duties of life. Here lived Haydn. Mozart, but one year dead, still lived in the hearts of the people. To this city of arts came the young man in triumph, and welcomed by all as a new light in the world of music. Every attention was shown him, and princely houses opened their doors to receive him. Here he remained for eight years, gradually overcoming his lack of

education, and improved his talents greatly. A life of professional labor followed, the details of which are too numerous to relate—sonatas, trios, etc., for all sorts of instruments, besides quartets and quintets. His only opera was "Fidelio."

In a letter to a friend in June, 1800, he writes that his hearing has been gradually becoming weaker for the past three years, and adds that his ears are still ever ringing and singing day and night, and that for two years he has almost shunned society, "because it is impossible to tell people I am deaf." In the summer of 1802 he had a dangerous attack of illness, and in the prospect of death wrote a remarkable paper, addressed to his brother, in which he paints the sufferings which he had passed through in very powerful language: "Born of an ardent, sanguine temperament, and peculiarly susceptible to the pleasures of society, yet at this early age I must withdraw from the world and lead a solitary life. When I at times have determined to rise superior to all this, oh, how cruelly have I again been cast down by proofs doubly painful of my defective hearing; and yet it has been utterly impossible for me to say to people, 'Speak louder, scream, for I am deaf!' Ah, how could I proclaim the weakness of a sense which I ought to possess in a higher degree than others, which once I did possess in the highest perfection—a perfection equaled by few of my profession. Forgive me, then, if I draw back when I would gladly mingle with you."

Many years of labor, however, in the line of composition followed, until his life came to its close in Vienna in 1826.

WEBER.

There is a charm in the name as there is in the musical strains of the German composer, Karl Maria Friedrich Ernst von Weber, a baron of title, born of a distinguished family at Entin, near Lubeck, in 1786. His father, who was a musician, gave him a liberal education, and afforded him the means for studying music and painting. He was taught first by the pianist Hauschkel, and afterwards by Michael Haydn. He made his first productions in 1798, which were published by his father. He soon went to Munich, where he received lessons in singing from Valesi, and in composition from Kelcher the organist of the Court Chapel. Here he composed works which he subsequently destroyed. His fondness for pictorial art was revived by the discovery of lithography, to which he gave himself up for a considerable time, endeavoring to effect improvements upon the original invention. In 1800, however, he returned to the study of music, and produced an opera called "Das Waldmadchen." In 1801, he composed several other works, but which did not meet with satisfactory success. In 1802, he went to Vienna, where he remained two years, studying with Vogler. Then he became

chapel master at Breslau, where he composed an opera called *Rubezahl*. In 1806, he entered into the employment of Prince Eugene of Wurtemberg, and produced at Carlsruhe, in Silesia, two symphonies, and a number of less important works. The troubles of the period compelling him to abandon this situation, he resided for a while at Stuttgart, as private secretary with Prince Louis of Wurtemberg, for whom he rewrote his first opera under the new title of *Sylvania*. In 1810, he began a professional tour of the principal cities of Germany. At Darmstadt, he composed *Abu Hassan*. From 1813 to 1816, he conducted the opera at Prague, and afterward as manager of German opera at Dresden until his death. In 1822, he produced at Berlin his principal work, *Der Freischutz*, which has since held its place on the operatic stage. In 1823, *Euryanthe* was first performed at Vienna. In 1824, he was applied to by Charles Kemble for an opera for London, and in April, 1826, *Oberon* was first represented at Covent Garden theater. Weber himself conducted the performance, and was saluted with unprecedented ardor. Two months thereafter he died suddenly of consumption, at the house of his friend, Sir George Smart, and was buried at Moorfields, from whence his remains were removed to Dresden in 1844.

Weber's mind was sensitive and poetic, and he found congenial material in the musical treatment of subjects in which the fanciful legendary and supernatural elements predominate. Such a subject was presented in *Der Freischutz*, and his scene in the wolf's glen in that opera is one of the boldest and most original pieces of musical coloring that any composer of this century has produced. He took rank at the head of the so-called romantic school. He possessed great harmonic invention, and a vein of fresh and beautiful melody. His character of Agatha, in the last-named opera, is one of the most finely-drawn and beautiful pieces of the operatic stage. His influence on the piano-forte playing of his day was considerable, and many of his compositions of that class, such as his *Concertstuck* and his "Invitation to the Waltz," are examples of fine melodic invention, beauty of form, and delicate fancy. He left a number of literary compositions relating to musical subjects.

ROSSINI.

The Italian composer, Gioacchino Rossini, who died in Paris as late as 1868, was born in the sunny land of song, in 1792. His parents were members of an operatic company traveling the country, and at ten years of age he played the second horn in the orchestra, his father playing the first. Soon after, he was placed with Angelo Tisi, a music teacher of Bologna, under whose instructions he developed a soprano voice of great purity and compass; and at fourteen he was able to sing at sight any piece of music placed before him. After being for several

years a chorister in the Bolognese churches, and occasionally chorus master in prominent theaters, he was induced in 1807, by the breaking of his voice, to enter the Lyceum of Bologna, where he was instructed in counterpoint by a distinguished master. After leaving this school, he studied the works of the principal opera writers, giving especial attention to Mozart, and at eighteen years of age produced his first dramatic work, an operetta, performed with success in Venice. In 1813, he appeared before the Venetians with three operas, one of which—*Tancredi*—excited an enthusiasm almost without parallel in the history of music, and in three years found its way into every musical theater of Europe and America. "Tancred" still holds possession of the stage. In 1815, he produced for the San Carlo theater of Naples his "Queen Elizabeth," and a year later, "The Barber of Seville," probably the most admirable specimen of the Italian *opera buffa* in existence, was performed in Rome during the carnival with a success which, after more than the lapse of half a century, has suffered no diminution. The "Barber" is said to have been written within eight days. Then in 1818, following numerous compositions, came "Moses in Egypt," which ranks among the author's finest serious compositions.

In 1821, he married Mlle. Colbran, prima donna at the San Carlo, for whom many of his parts were written. With her he went the same year to Vienna, to direct the production of his *Zelmira*, in which his wife took part. Returning to Venice in 1823, he took leave of the Italian stage with the opera *Semiramide*, the most elaborate of his works up to that period. In 1824, he visited London with his wife, under an engagement to compose an opera for the King's Theater. An indolent carelessness now took the place of his former activity; he neglected his duties, failed to produce his promised opera, and made the season ruinous to the lessees of the theater. But his visit was profitable to himself, and he left England with £10,000, derived principally from concerts arranged for him by the leaders of fashionable society, at enormous prices of admission.

Going to Paris, he accepted the post of director of the Italian opera, an office which he held till 1830, with little increase of professional celebrity, but with considerable profit. In 1829, he produced *William Tell*—generally considered his master-piece in serious composition—a work abounding in beautiful melodies, and in rich and varied instrumentation, but so different in style from any of his previous operas that it seems the creation of another mind. With this work, at the age of thirty-seven, and in the prime of his powers, he voluntarily closed his career as a dramatic composer, and for many years he wrote nothing, with the exception of his *Stabat Mater*, a pleasing composition, but rather operatic than ecclesiastical.

During his residence in Paris, he was appointed by Charles X. inspector general of singing, with a liberal salary, from the enjoyment of which he was cut off by the revolution of 1830. He still remained several years in Paris. In 1836, he retired to an elegant villa near Bologna, where for twenty years he principally resided, refusing the most tempting offers to write for the stage, on the ground that he was unwilling to

endanger his reputation by the production of inferior works. Disturbed by the revolution of 1848, he returned first to Florence, then to Paris, where he chiefly resided until his death. His remains rest in Pere Lachaise.

MEYERBEER.

The great German composer, Giacomo Meyerbeer, was born in Berlin, in 1794. He was of a wealthy Jewish family, distinguished for a love of music. Like most distinguished musicians tales are told of his early childish precocity—of his playing little tunes spontaneously on the piano in his fifth year. Zelter was his instructor upon that instrument, and Bernhard Anselm Weber in dramatic composition, when in 1810, he was admitted to the school of Vogler, the principal organist of Germany, in Darmstadt. Here he was a room mate of Karl Von Weber for two years, resulting in a life-long friendship. Then he made a musical tour through Germany with Vogler, and wrote his first opera at Munich. He visited Vienna and was commissioned by the Court to write an opera, but as at that time it was the fashion to delight in the music of Rossini, his effort was not deemed a success. Visiting Italy he himself became enamored of the music of that great artist and his school. He began to imitate the Italian style, and composed in rapid succession a series of operas, which were favorably received. They were performed in Padua and Turin. He was received by the fastidious audience of Scala in Milan, where soon after his next great opera, "Margaret of Anjou," (1822) was favorably received by the Italians. His "Crociato," his next important composition, was given in Venice, and at the close of the performance Meyerbeer was called before the curtain and crowned amid the applause of the audience. He was then invited to Paris which henceforth became his headquarters. Here, in 1826, he composed "Robert le Diable," which created an unparalleled excitement in the history of the Parisian stage. This enthusiasm was shared by nearly all Europe, in Germany especially, as it had elements akin to Goethe's "Faust,"—convivial, pathetic and supernatural. The most popular airs were transferred from the stage to the streets, and were universally sung. Jenny Lind won fame in it. It contains the best melodies of Meyerbeer, and which are formed upon the style of Rossini. The climax of the fame of Meyerbeer was reached, it is thought, in "The Huguenots." This appeared in Paris in 1836, and admiration of it has never yet ceased. Friends and rivals were unanimous in admiration of his genius. The dramatic character of the "Huguenots" is considered unsurpassed by any work of the lyric stage, and the strife between the great religious parties of France were never portrayed with such graphic power and thrilling effect. His other principal works are "The Prophet," "Peter the Great," and "L'Africaine." He died in Paris in 1864.

MENDELSSOHN.

Felix Mendelssohn, the great musical interpreter of the historical poetry of the Scriptures, was born in 1809, at Hamburg, Germany, and lived till 1847. He was of an eminent and independent family, his father being a banker, and a man of wealth and refinement, and his grandfather a philosopher and author. There were four children of his father's family, but the eldest sister Fanny was the especial companion of his life. Felix and Fanny were the distinguished members of his father's family. When Felix was four years old his parents removed to the City of Berlin. According to the sensible German idea, that all children who showed the slightest inclination for music should be early instructed in its practice, the boy was taken in hand by his mother, an excellent teacher, and well grounded in the rudiments of music. At Berlin he was put under the tuition of Madame Bigot. There he was happy in an atmosphere of music. No miserable cares about money; no trying exposure to public gaze; no late, feverish nights in hot and crowded saloons—such as filled poor little Mozart's boyhood; nothing but health, comfort, friends, sunshine and peace, were around the fortunate Felix in his early days. The boy's parents were good sensible people, determined that the child should be well educated in all things, and not in music alone. Whatever affection could suggest or money command was lavished upon him. At eight years of age he was a strong healthy boy, active and merry, and filled to overflowing with a great love for music. He could play the most difficult fugues, compose new music on a given theme with facility and credit, and was possessed of an uncomonly correct ear. When twelve years old, he was taken to see Goethe. The aged man was charmed with the boy and his music. He put him to all the tests, gave him music of Mozart's to play, which he performed not only with great ease, but also with feeling and expression. Beethoven's music was likewise placed before him, and, though the manuscript was blurred and badly written, he managed to read it, and played it off finely to the delight of himself and the company. This visit to Goethe was the beginning of a life-long friendship between the aged poet and the young composer.

Mendelssohn's studies, aside from music, were thorough and clasical. He went through a regular university course and was always considered a well instructed person. His musical course was nearly completed by Zelter and Burger, but the finishing touches were put on by the hand of the great pianoforte player, Moscheller. It is difficult for us here to understand the intense musical life in some German families. Music is the very atmosphere they breathe. Mendelssohn's father's house was the scene of more frequent and remarkable musical gatherings than are common even in German houses; concert after concert took place in their parlor. The music besides being abundant, was also of the very best kind. Bach, Beethoven, Handel, and Mozart contributed to the feast. Mendelssohn's own compositions were here first brought out. Here at home he first played, as a pianoforte duet with his sister Fanny, "The Overture to a Midsummer's Night's Dream"—his earliest piece of

music that bore real and peculiar marks of genius—designed to represent in music Shakespeare's fairy play. When about twenty-two he traveled—not to make money, but for pleasure. He visited England and Scotland. In the North the natural scenery impressed him greatly. When he returned home, his sister Fanny asked him for a description of Fingal's Cave and the wild and rocky Hebrides. "It cannot be told—only played," said he, and sitting down to the piano, he began to play. The strains which he used to give her an idea of the scenery he afterwards worked up with a grand orchestral symphony, which he called "The Hebrides."

Afterwards he went through Switzerland to Italy. In all his journeyings he continued composing and adding to his store of musical attainments. Wherever he went he met new and remarkable people, and secured friends who remained his for life. For a time he was director of the Conservatory of Music in Leipzig—a position which he filled with great credit. The rest of his life was given, as far as public life was concerned, to the direction of concerts and oratorios. A happy marriage, and freedom from the cares of poverty, made his lot unusually auspicious. His fame princiapally rests upon his oratorios, "St. Paul" and "Elijah." He was a contemporary of many now living,—having died Nov. 4, 1847.

LISZT.

Dealing so long with eminent German composers, it will be refreshing to turn our attention for a moment to men of other countries who have been alike famous for musical genius. Among them we cannot refrain from a brief allusion to Franz Liszt, the Hungarian pianist who was born near Odenburg in 1811. At six years of age he manifested so extraordinary an aptitude for music, that his father himself a musician of some repute, thenceforth carefully instructed him on the pianoforte. In the ninth year he performed a public concert in Presburg at which were present several worthy Hungarian noblemen. The latter astonished at young Liszt's talents at once proposed to contribute to his musical education during the next six years. In accordance with this proposition Liszt was taken by his father to Vienna and put under the instruction of Czerny and Salieri, with whom he remained eighteen months, after which he appeared in concerts in Vienna, Munich and elsewhere with great success. At Paris, where he arrived in 1823, he received the most flattering attention. Although rejected as a pupil at the conservatory on account of his foreign birth, he was carefully instructed in counterpoint by Reicha, and not a day passed that he did not give many hours of practice to the work of Bach and other eminent composers for the pianoforte. When

his education was considered finished, father and son made lucrative concert tours in the provinces and in England. Upon his return to Paris in 1825, Franz produced an opera *Don Sancho*, but this did not meet with the highest success. In 1827 he lost his father, an event which made a deep impression upon him, and under the influence of an unusually active imagination he surrendered himself to gloomy fancies and religious rhapsodies. An unhappy attachment to a lady of rank at the time prompted him to retire from the world, and for several years he almost wholly relinquished his art. He devoted himself to the theories of certain French philosophers, and the vivid poetic fancies of Victor Hugo. or George Sand. During the revolution of 1830, he composed a *Symphonie Revolutionaire*, but it was never published. The appearance of Paganini in Paris in 1831, roused him from his mood, and, full of the idea of becoming the Paganini of the pianoforte, he resumed his practice on that instrument. In 1835 he heard of the success of Thalberg in Paris, and, after an interval of eight years, suddenly made his appearance there with an iclat which his long absence had in no respect diminished. A contemporary critic, in enumerating the qualities which distinguished both pianists, observed, "Thalberg is the first, but Liszt is the only one." From Paris, Liszt proceeded in 1837 to Italy, creating everywhere a sensation not less lively than that caused by Paganini. At Vienna he gave a series of concerts in aid of the sufferers by the great inundation of 1838 at Pesth, and at the solicitation of a deputation of Hungarian noblemen he subsequently visited the latter city, where he was received with extraordinary enthusiasm, and was presented by the inhabitants with a sword of honor and the rights of citizenship. In 1839 he contributed 60,000 francs (the whole sum) to a monument to Beethoven in Bonn, which was inaugurated in 1845. From 1838 to 1847 his career was a succession of triumphs. In the latter year he retired to a small village in Germany, with the intention of devoting himself to a higher order of composition than the fantasias and other pianoforte pieces which he previously produced. About this time he accepted an offer from the duke of Weimar to assume the part of conductor of the court concerts and the opera of that city. In this position he made Weimar one of the chief musical centres of Europe, and helped to introduce to notice several of the rising composers of Germany, notably Richard Wagner. With characteristic generosity he also afforded gratituitous instruction to young pianists, for whose benefit he gave private performances. In 1861 he went to Rome and became a favorite of the pope. In 1865 he took ecclesiastical orders; and since that time he has been known as the abbe Liszt, and has devoted himself principally to the composition of church music. In 1870 he acted as leader of the Beethoven festival at Weimar, and afterwards gave concerts for charitable and religious objects in German, Austrian and Hungarian cities. In 1871 he sold his villa at Rome and took up his residence in Pesth; and in 1874, the 50th year of his artistic career, he gave to the museum of Pesth his valuable collection of curiosities and works of art. As a performer Liszt stands at the head of what is called the "prodigious" school, excelling in the

production of difficult and novel effects. He moreover has the credit honorable to his character of being a most faithful interpreter of the music of Bach, Handel, Beethoven and the older composers. He has been an active contributor to musical literature, and is the author of a "Life of Chopin," and a work on "The Gypsies and their Music."

WAGNER.

On the 22d of May, 1813, Richard Wagner was born at Leipsic. His father held some unimportant office, but died when the son was only a few months old. Richard received an incomplete scholastic education, though his mind had a literary cast, and at the Dresden school he was considered an apt scholar. He began to write plays at twelve years of age. His thoughts were fixed upon music as his profession at the age of fifteen, being enamored of Beethoven's symphonies. His first systematic studies were made under Weinlig while he was a student at the University of Leipsic. In 1833 he wrote a romantic opera entitled "The Fairies." In the summer of 1834 he became musical director at the Magdeburg theatre, where in 1836 he brought out his opera "Das Liebesverbot," the words and music being his own. Resigning his place, he became musical director at Kœningsberg, and where, in 1836, he married. Soon after he removed to Riga, where he remained, director of music at the theatre till 1839. To prepare himself for a favorable reception at Paris, he wrote in 1838 the beginning of a more elaborate opera than any he had previously composed, called *Rienzi*. On arriving at the French capital he found that the want of means and influence interrupted all his plans. Here Meyerbeer generously came to his aid, found him employment, and afterward the opportunity of putting forward his claim to artistic recognition. Here he produced *Faust*, but it did not succeed there. He did, however, much work for theatres in minor compositions. Writing of these hard experiences, Wagner says: "Manifold difficulties and very bitter want encompassed my life at this period." During this time he wrote "The Flying Dutchman," which he completed in seven weeks and sent to Meyerbeer, who was then at Berlin, where subsequently it was produced. Wagner went to Dresden in 1842, and in October of the same year his *Rienzi* was brought out. Its success procured for its composer the Prussian Order of the Red Eagle and the position of chapel master at t e Dresden opera house. While holding this office he brought out "The Flying Dutchman" and composed *Tannhauser*, which was produced in 1845. Subsequently he composed *Lohengrin*, an opera still more identified with his peculiar views of art. It was about to be produced at Dresden in 1849, when the revolutionary outbreak in Saxony took place. Wagner had always held extremely liberal political principles, having as far back as 1830 identified himself at the University with

the liberal party. He was an active leader in the movement, and when it was suppressed took refuge in Zurich and became a citizen of that Canton. In 1850 he was appointed director of the Zurich musical society and of the orchestra at the theatre. Here he remained nine years, in the meantime composing a portion of his great series of operas founded on the *Nebelungenlied*, the Homer of Germany.

Wagner had a good friend in Frank Liszt, under whose direction and through whose efforts *Lohengrin* was first produced in Weimar in 1850. After an absence of nearly ten years Wagner received a pardon from the King of Saxony, and he took up his residence in Munich, where in King Louis of Bavaria he soon found an earnest adherent and powerful patron. His *Tannhauser* never succeeded in Paris notwithstanding the favor of the Emperor. In Vienna in 1862 it was received with great favor. Wagner's second wife was the daughter of Liszt.

Wagner's theories of operatic composition have occasioned wide discussion. He believed that music should spring directly from the requirements of the text; that instead of having here and there melodies with intervening recitative, the whole opera should be melody. His is an effort to redeem the stage from "insincerities and trivialities."

☞ **PLEASE TO READ.—Constitution and List of Officers, respectfully submitted to the course ticket holders for their consideration, at 7:45 o'clock this evening.**

PREAMBLE.

WHEREAS, The business men and employees of Cleveland recognize the great advantage of organization, and with the object of giving greater permanency and efficiency to the work already accomplished by the Cleveland Educational Bureau, the following Constitution is adopted:

CONSTITUTION.

ARTICLE I.

NAME AND OBJECT.

SECTION 1. The name of this society shall be The Cleveland Educational Bureau, or The People's College, of Cleveland, Ohio.

SEC. 2. The object of this Bureau or College shall be practical instruction, popular entertainment for the people, and good will to each other.

ARTICLE II.

MEMBERSHIP.

SECTION 1. Any person may become a member of the Educational Bureau by annually purchasing on or before April 1st one of its regular course tickets to entertainments; provided, said ticket is returned for

record to the Secretary on or before April 1st, with address and occupation given in full. No assessment shall at any time be made. All parties who have already purchased course tickets are constituted members till October 1st.

SEC. 2. Members shall have the privilege, prior to the public, of purchasing course tickets.

ARTICLE III.

DUTY OF MEMBERS.

It shall be the duty of members, if there be any instruction which can be given, or kindness which can be shown, or good which can be done to any fellow being, *to do it now*, as we may not pass through this world again. This may mean loan your ticket, if not in use, or a thousand similar kindnesses

ARTICLE IV.

OFFICERS.

SECTION 1. The officers of the Bureau shall be a President, fifteen Vice-Presidents, a Secretary or Manager, and a Treasurer, who shall be elected *viva voce* at the annual meeting, and for a term of one year, or until their successors are elected; and they shall perform the duties usually belonging to these officers.

SEC. 2. The Vice-Presidents shall constitute an Advisory Board.

SEC. 3. The Secretary, under direction of the Executive Committee, shall keep a list of members, prepare an annual report of the conduct and state of the Bureau, and maintain such correspondence as may tend to advance its interests, keeping on file all papers received, and on record those sent. He shall also keep the membership and committees properly advised.

SEC. 4. The Treasurer, under direction of the Executive Committee, shall keep all unused funds in Bank credited to the Bureau, also an accurate account of all receipts and disbursements, and make to the Bureau an annual statement, which must be audited by at least two experienced book-keepers.

ARTICLE V.

EXECUTIVE COMMITTEE.

SECTION. 1. There shall be an Executive Committee elected at the annual meeting, and composed of thirteen members, including the President, Secretary and Treasurer, *ex officio*. The President and Secretary shall be chairman and secretary of the Executive Committee.

SEC. 2. The general management and care of the interests, property, and work of the Bureau shall be vested in the Executive Committee.

SEC. 3. It, however, shall receive and execute all instructions of the Bureau, promote vigorously its objects, and shall employ and discharge such persons as they may deem necessary for the work, provided they shall incur no financial obligation for which provision has not been already made.

SEC. 4. This Committee shall be charged with fixing the date of the annual or other meetings of the Bureau, and all preliminary arrangements of business connected therewith.

ARTICLE VI.

POWER TO MAKE BY-LAWS.

The Bureau shall have power to make By-Laws for its own government and the government of its committees, officers and agents; said By-Laws, however, shall not be in conflict with this Constitution.

ARTICLE VII.

AMENDMENTS.

This Constitution may be amended at the Annual Meeting of the Bureau by a two-thirds vote of the members present; provided, a notice of the amendment shall have been printed in at least one of the daily papers of Cleveland thirty days prior to action on said proposed amendment.

MOTTO: *Know thyself.*

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BOOKS FOR THE PEOPLE.

No. 12.

"The heavens declare the glory of God,
And the firmament showeth His handiwork."

ASTRONOMY

A GUIDE to the WONDERS
OF THE
SUN, MOON AND STARS.

PUBLISHED BY
THE CLEVELAND EDUCATIONAL BUREAU.
CLEVELAND, OHIO.

LEADER PRINT.

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E. R. HULL,

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CLEVELAND

EDUCATIONAL BUREAU.

"An undevout astronomer is mad."
"By night an atheist half believes in God."—*Young.*

SECRETARY AND TREASURER'S REPORTS AND THE PROSPECTUS FOR 1882-83.

ORGANIZED BY

THE BUSINESS MEN FOR THEIR EMPLOYEES, AND THE PEOPLE.

CLEVELAND, OHIO.
1882.

TWELFTH ENTERTAINMENT

MUSICAL PRELUDE, FROM 7:15 TO 8:10.

FIRST APPEARANCE IN CLEVELAND OF

THE UNIVERSITY JUBILEE SINGERS

OF NEW ORLEANS.

Miss T. JONES	Soprano.	Mr. M. WALKER	Tenor.
Mrs. N. TOOMBS	Soprano.	Mr. A. TOOMBS	Tenor.
Miss L. PARKER	Contralto.	Mr. S. TOLIVER	Basso-
Miss JENNIE ROBINSON	Alto.	Mr. L- TILMAN	Basso-

Miss GEORGIE MILLER.....Organist.

PROGRAMME.

PART I.

1. "I'm Rolling Through an Unfriendly World."
2. "The Angel's Wings".....[Melo-dramatic Solo and Chorus.]
3. Selected.
4. "Angels Meet Me at the Cross-roads."
5. Roll a' and Rock a' dem in His a' Arms.".....[African Social Class-Meeting Hymn.]
6. "Old Ark is Moving."

PART II.

1. Exodus Song—"We are Going."
2. Walk Jerusalem Just Like Job.
3. Joshua Fit the Battle of Jerico.....[Camp Meeting Hymn.]
4. Selected.
5. "Gospel Train."
6. General Roll Call.

This Troupe was first organized in 1876, and was composed principally of students of the New Orleans University. After nearly four years' work, under Dr. Godman, formerly of Berea, Ohio, the requsite funds were raised to secure, for the colored race, the Orphans' Home of La Teche, Louisiana, which was heavily in debt. They held one hundred Concerts consecutively in Philadelphia, New York and Brooklyn.

LECTURE—8:15 O'CLOCK,

BY

JOHN B. GOUGH, Esq.

SUBJECT: "PECULIAR PEOPLE."

ATTENTION! Immediately after Mr. Gough has been introduced, and the clapping of hands ceases, please give the "Silver-Tongued Orator" a "College Salute,"—open and vigorously wave every book. AWAIT the signal of the upraised hand from General Leggett, on the platform.

SPECIAL NOTICE.—See last pages for the Secretary's and Treasurer's Reports; also the Prospectus for 1882-83 Entertainments. Be prompt this evening in securing your options for tickets, or you will lose them. $2,500 worth taken in sixty minutes last Saturday evening.

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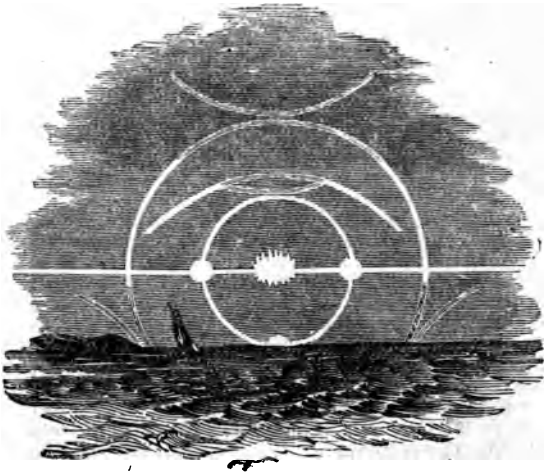


ASTRONOMY AND ITS MARVELS.

CHAPTER I.

What is Astronomy?—The Chief Divisions of Astronomy—Descriptive Astronomy—Numbering the Stars—On a Gigantic Scale—The Milky Way—Stars of Variable Brilliancy—The Movements of the Stars—The Center of the Universe—Nebulæ—The Distance of the Nebulæ—A Favorite Theory—The Constellations—The Great Bear—The Belt of Orion—An Astronomical Rhyme.

ASTRONOMY is the science which treats of the constitution, motions and appearances of the heavenly bodies. Its scope includes the whole visible universe outside our atmosphere.

The chief divisions of astronomy are, 1. Descriptive or Physical Astronomy, which, as its name implies, includes the simple description of celestial phenomena and laws, and is to the heavenly bodies what physical geography is to the earth. 2. Theoretical Astronomy, which comprises the investigation of the celestial motions. 3. Practical Astronomy, which teaches the art of using astronomical instruments, and, by their means, of determining positions on the earth and in the heavens.

The material universe, as revealed by the telescope, is formed of a vast collection of stars and nebulæ, to the number of which no definite limit can be set, scattered through an immeasurable and inconceivable extent

of space. Of the stars, about 5,000 are usually visible to the naked eye, but very keen observers can detect as many as 8,000. The number visible is greatly increased when a small telescope is pointed at the heavens, and continues to increase with every increase in the power of the instrument, rising in the case of the most powerful telescopes to forty or fifty millions, or six or eight thousand for every one visible to the naked eye. Even then there is no evidence that the smallest stars are seen, but every reason to believe that larger instruments would show millions more in every direction. The telescopic stars are for the most part scattered at random, except that they are many times thicker in some regions than in others. But great numbers of clusters are known in which great

TELESCOPIC APPEARANCE OF THE MOON.

telescopes show a whole firmament of stars in a spot hardly visible to the naked eye.

The first inquiry which suggests itself in considering the stellar universe is, Can we form any estimate of its magnitude, or of the scale on which it is constructed? The most difficult and refined investigations of recent times have been devoted to this question, but only with partial success. Until near the middle of the present century, the distances of even the nearest stars eluded measurement, and even now there are not a dozen of which the parallax is known with anything like certainty. But there are sufficient to enable us to form a sort of judgment, at least, of the scale on which the universe is constructed. It is roughly estimated that the stars of the first magnitude have, on the average, an annual parallax

of two-thirds of a second, and are therefore at an average distance of about a million times that of the earth from the sun. The distance may be most conveniently expressed by saying that light, moving round the earth eight times in a second, would require fifteen years to traverse it.

Now supposing that, on a general average, the more distant stars are of the same real magnitude with the nearer ones, but only look smaller on account of their greater distance, we may conclude that the smallest stars visible to the naked eye are ten times as far as the nearest ones; and allowing for their range of real magnitude, we may conclude with considerable probability that they lie at distances which light traverses in from fifty to two hundred years. In other words, if we conceive two spheres described around our sun as a center, the smaller with a radius over which light would pass in fifty years, (in round numbers, three hundred millions of millions of miles), and another with a radius four times as great, it is probable that a large portion of the stars of the sixth magnitude will be included between these two spheres. Applying the same reasoning to telescopic stars, we may conclude that the smallest stars visible in the most powerful telescopes are at distances which light would traverse in from five to fifty thousand years. Of what is beyond, we know nothing as yet.

Of the form and boundaries of this agglomeration of stars, which forms the visible universe, nothing positive is known, but it is certain that there is a great tendency to aggregation near the plane of the Milky Way. The latter is well known to consist of vast aggregations of telescopic stars, too small to be visible separately to the naked eye. This fact was first clearly shown by Herschel, and led him to his celebrated theory that all the visible stars form a comparatively thin stratum, near the center of which our sun is placed. That the densest portions of the universe are spread out into such a stratum there can be no doubt, but of the limits of the thinner portions, composed of stars scattered outside of this stratum, nothing positive can be asserted.

Nothing indicating either growth or decay has been actually observed in the stellar universe. There is no established instance either of a known star disappearing from the heavens, or of a really new one coming into view. The supposed cases of the latter kind are now found to be due to extraordinary variability; a small star, perhaps invisible to the naked eye, suddenly bursting forth into brilliancy and after a time subsiding to its former magnitude. Several instances of this kind are on record.

A large number of stars—probably one out of every forty or fifty—are of variable brilliancy. Usually, the variations are so slight as to be discovered only by the careful watching of the trained observer, but in a few cases they are so striking as to be plain to any one who will observe. The star of Argus, in the southern hemisphere, varies in an extraordinary and irregular manner. Mira Ceti, usually hardly visible to the naked eye, rises nearly to the second magnitude once in every ten or eleven months, and after a week or two fades away again. Generally the variations take place in a regular period, so that the times of greatest and least brilliancy admit of tolerably exact prediction.

The stars are found to be moving among themselves in a way that must ultimately lead to an entire change of their distribution, and perhaps to

their entire separation. The velocity of motion is usually from twenty to fifty miles per second, but in one instance it probably exceeds two hundred miles per second. So far as observations can show, the rule is that each star moves forward independently in a straight line with a uniform velocity. From the few estimates of the masses of the stars which have been made, there is no reason to believe that their motions can be appreciably affected by their mutual gravitation. The combined attraction of all the stars visible with the most powerful telescope, supposing their masses to be correctly judged by those of the stars which have been weighed, would never stop, and would hardly turn aside, the star Arcturus in its course of sixty or eighty miles per second, or Groombialze 1800 in its course of 200 miles per second. There is, in fact, no certain evidence that the stellar universe is held together by any bond of attraction whatever, as our solar system is. Madler's view that Alcyone

METEORIC SHOWER.

is the central sun of the universe, is a piece of groundless speculation which has never received the assent of astronomers qualified to judge it. The stellar motions take place in every possible direction, and without regard to any known law, except that, as a general rule, stars in the same region of space, move nearly in the same direction.

Besides stars we have nebulæ as component parts of the telescopic universe. They are cloud-like patches of light scattered all over the heavens, but less numerous in the Milky Way than at some distance from it. Two of them, situated in the northern hemisphere, the great nebulæ of Orion and of Andromeda, are clearly visible to the naked eye. Before the discovery of spectrum analysis it was not possible to draw the line between nebulæ and clusters of stars, because large numbers of objects which look like nebulæ through small telescopes are found with

large ones to be clusters of stars, and every increase in the power of the instrument was found to change objects from the former to the latter class. It was therefore doubtful whether all nebulæ were not really clusters of stars too small or too distant to be resolved with the telescope. But as soon as the spectroscope was turned upon such of these objects as could give a visible spectrum, it was found that many of them were not solid bodies at all, but masses of incandescent gas, generally hydrogen or nitrogen. To this class belongs the nebula of Orion, which is therefore a true nebula. On the other hand, the nebula of Andromeda gives a continuous spectrum, showing that the luminous matter is in the solid or liquid state, and probably consists of an agglomeration of stars, though no telescope has yet resolved it.

We have no data whatever for forming a judgment of the distance of the nebulæ, as we have in the case of fixed stars. A favorite theory is that the forty or fifty millions of stars separately visible through the

THE GREAT BEAR.

largest telescopes, the greater number of which, as we have said, are spread out in a thin, widely-extended stratum, form a system to which our sun belongs, and that many of the resolvable nebulæ are similar systems situated far outside of our own.

In favor of this theory it is said that our Milky Way, viewed from a point five hundred times the distance of the most remote star in it, would have the appearance of a nebula, and would give a continuous spectrum, although no telescope we possess would resolve it. It is therefore possible that many of the more distant nebulæ may be such systems. But the greater number of visible clusters cannot compare with our Milky Way in the number of their stars, as they only comprise a few hundreds or thousands. We can really draw no line of demarcation between the agglomerations of stars within our own system and the most distant cluster, the whole range from one extreme to the other being filled with known objects. We must therefore regard the views in question as forming a very grand, but yet unproven hypothesis.

Our description of the stellar universe may be summed up by saying that it is composed of an unknown host of stars, certainly more than 50,000,000, mostly scattered in irregular aggregations forming the Milky Way, while many are aggregated in yet closer clusters, some of which are situated within the Milky Way and some without it, and of a number of enormous masses of incandescent gases situated at unknown distances. Our sun is simply one of these 50,000,000 stars, without, so far as we know, any mark to distinguish him from his fellows. He is probably rather smaller than the average; removed to 1,000,000 times his present distance, which is probably the average distance of the stars of the first magnitude, he would shine only as a star of the third or fourth magnitude. He is indeed accompanied by a number of nonluminous planets, while with one possible exception, no such companions are seen to the stars; but this does not disprove their existence, because every planet of our system would disappear from view in the most powerful telescope at a distance far less than that of the nearest star.

THE BELT OF ORION.

Among the stars composing our system there are certain conspicuous groups or constellations which were named by the earliest astronmers, and compose a list of the most ridiculous imaginary figures, as useless to the casual observer of the stars as to the astronomer, and which have not the most distant resemblance to those figures after which they are named—as, for instance, the Great Bear (Ursa Major), which we show in the illustration.

The grouping of the stars into constellations serves, however, to find any one required (provided the groups on the chart can be identified with those in the heavens); as, for instance, the three conspicuous stars forming "Orion's Belt," from which a line produced eastward will point to Sirus, the brightest star in the heavens, and another line produced westward will serve to point out "Aldabaran," also a star of the first magnitude; also a line drawn from *a* to *b* in the Great Bear, will nearly point to the Pole Star—the star situated nearly (though not exactly) at the pole, or that part of the heavens that would be indicated by a line drawn through the earth at its axis of rotation.

CHAPTER II.

The Sun—Its Physical Constitution—Sun Spots—A Difficult Question—The Sun's Rotation on its Axis—The Sun's Retinue of Planets—The Course of the Planets—Mercury—Venus The Earth—The Form of the Earth—The Movements of the Earth, and its Travels through Space—The Moon—The Phases of the Moon.

The sun in his course passes over the zodiacal constellations, visible of course both in the northern and southern hemispheres of the earth. These are Aries, Taurus, Gemini, Cancer, Leo, Virgo, Sagittarius, Capricornus, Aquarius, and Pisces, the Latin names for the constellations, the order of which may be remembered by the following rhyme:

"The Ram, the Bull, the heavenly twins,
And next the Crab, the Lion shines;
The Virgin and the Scales,
The Scorpion, Archer, and the Goat,
The man that holds the watering-pot
The fish with glittering scales.

The physical constitution of the sun and stars is a subject, which has greatly occupied investigators in recent times, without leading them to an entirely certain and complete conclusion. The theory of Wilson and Herschel that the sun is a dark, cool body, surrounded by a stratum of luminous clouds floating in an atmosphere, has been one of the best known, but it is completely disproved by the modern discoveries of the conservation of force and the equivalence of heat and force. The enormous volumes of heat sent off by the sun can be supplied only by a continuous expenditure of force, and any theory which accounts for the solar light and heat must show whence that force comes. We know that our sun has been radiating light and heat in quantities as great as at present for thousands or even millions of years, while the sun of Herschel would cool off very quickly, and then cease to give either light or heat. In one respect, however, the theory in question is now universally agreed to; the "photosphere"—that is, the shining surface of the solar sphere—is composed of cloud-like matter, apparently floating in some kind of fluid, the whole being at an extremely high temperature. The spots are known to be dark depressions in the photosphere, as to the cause of which investigators are not yet agreed. That they are not merely dark spots or surfaces, is shown by the foreshortening of the nearest edge as they arrive at the verge of the sun's disc, and are consequently presented edgewise to the eye, so that a spot may have the appearance of *a* in the acompanying figure, when seen in front-view near the center, and of *b* when seen foreshortened near the edge of the sun's dise.

SUN SPOTS.

Of the interior of this enormous globe we can see nothing; but there is good reason for holding that it is mostly formed of materials similar to those which form the crust of the earth, heated to so high a temperature as to be eompletely vaporized and reduced to a state of *dissociation*,

or one in which chemical union of different elements is no longer possible. At the same time, the pressure to which this vaporous interior is subjected by the weight of its outer layers shows that it is compressed into the smallest possible space, so that the mean density of the sun is not much less than that of water.

On the outside, this mass is continually cooling off by radiation, and hence condensing to the solid or liquid state. The matter thus condensed forms the phostosphere, which seems to be in a state of continual change.

Immediately above the photosphere lies a comparatively shallow but extremely complex incandescent atmosphere, the absorption of which causes the dark lines in the solar spectrum. This atmosphere consists of hydrogen gas, mixed with the vapors of many of the metals, especially magnesium, calcium, sodium and iron; the metallic vapors, except that of magnesium, mostly lying so near the base that they are not visible, even with the spectroscope, except just at the beginning and end of a total eclipse. This atmosphere shines with a red light, and was frequently seen during total eclipses of the sun; but its existence and nature were first clearly brought to light by Mr. J. N. Lockyer's spectroscope. This gentleman termed it the chromosphere. It is agitated by storms of fire, the fury of which exceeds anything ever pictured by the wildest imagination of the poet, the velocity of the wind sometimes rising to 100 miles per second, the masses of fiery vapor many times the size of our earth shooting up to the height of 20,000, 50,000, or even 80,000 miles.

These masses constitute the red "proturberances" also visble during total eclipses of the sun, the nature of which was a complete mystery until the spectroscope was turned upon them by Janssen in India, during the great eclipse of 1868. They are now the subjects of daily observation by spectroscopists.

Outside the atmosphere lies an appendage, the nature of which is still involved in mystery, as it can be studied only during the rare moments afforded only by total eclipses of the sun. It is seen, in the glow of light which then surrounds the whole sun, extending to a height greater than the semi-diameter of that body, and is known as the solar corona. Its spectrum consists principally of a single green line, not identified with that of any terrestrial substance, but Janssen also recognized some of the lines of hydrogen during the eclipse of Decmber, 1871.

Some of the most difficult questions respecting the sun are, Whence come the floods of heat which he is continually radiating into space? Why did he not cool off hundreds of thousands of years ago? Why does he not now grow cooler from year to year?

Only in recent years have serious attempts been made to answer these questions, because only then was it recognized that heat was a form of force which could not be expended without being constantly renewed. The theory now most generally received is that of *contraction*. It is supposed that as the sun cools off he contracts in volume; and it is found by calculation that a very small contraction will develop an enormous amount of heat in a mass so immense as that of the sun, so long as it does not condense to the solid or liquid state. Thus the supply of

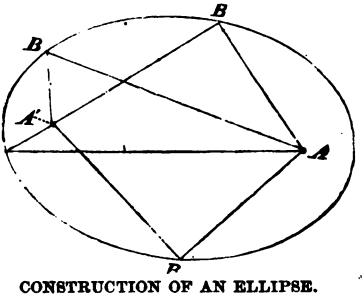
heat may be kept up for a million of years to come; but it must become exhausted at some time, unless renewed from some unseen source, and our system will then be involved in darkness and death.

By the motion of the spots it is found that the sun rotates on his axis in about twenty-five days, this being the period at the equator. But as we approach the poles the rate becomes slower and the period longer, approaching twenty-six days at a distance of 45°. Beyond this point very few spots are to be seen, and the law of rotation is not completely known. The liquid or gaseous character of the sun's surface is conclusively proved by the variation in the rate of rotation.

The sun is 1,400,000 times larger than our Earth. At a distance of 92,000,000 miles through the telescope and spectroscope, we distinctly observe on the surface the extensive burning fire-masses.

The sun is accompanied by a retinue of eight major planets, of which our earth is one, and by a large group of minor planets. The major planets may themselves be divided into two groups of four each, the four inner and smaller ones being Mercury, Venus, the Earth, and Mars; and the four outer and larger ones being Jupiter, Saturn, Uranus, and Neptune. The smallest of the outer group (Uranus) has more than ten times the mass of the largest of the inner group (the Earth), and is more than fifty times its size. Between the two groups is a wide gap, in which the minor planets are found.

The course which the planets take round the sun is not exactly circular, but deviating from it more or less, never being quite a circle. The orbit of each planet, if accurately computed and laid down on paper, proves to be that form of curved line called an "ellipse," or that form which instead of having one center, as in the circle, from which all lines radiating to the circumference are equal in length, has a longer and shorter diameter, two centers called "foci," and circumference or boundary so placed that the sum of any two lines, drawn one from each center, and meeting at any part of the circumference shall be equal to any two other lines so drawn and meeting at any other points of the circumference, and to the major axis or long diameter of the ellipse. In the accompanying diagram, each pair of lines drawn from A A and meeting respectively at B are equal. An ellipse may be very much elongated, or almost circular, but still have these properties which are essential to it; and in the case of the orbits of the planets, they are so nearly circular that if drawn a few inches wide they would hardly be detected to differ from the circle. The orbit of the earth is about one-thirtieth part longer than broad.

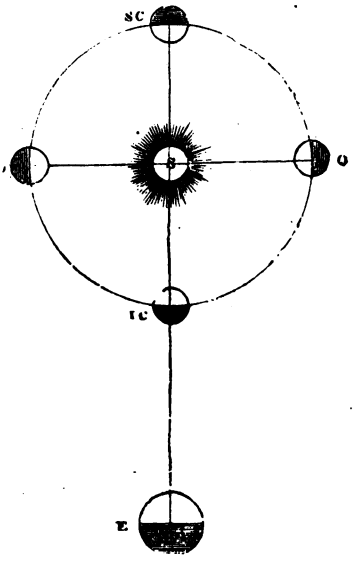


CONSTRUCTION OF AN ELLIPSE.

The chief peculiarities of each planet are given in the following paragraphs.

MERCURY.

the nearest to the sun, and the smallest of the major planets, shines with a light exceeding that of any of the fixed stars, with the possible exception of Sirius. Owing to its proximity to the sun, it can be seen by the naked eye only when near its greatest elongation, which occurs about once in four months on each side of the sun. The same circumstance, together with its intense brilliancy, has prevented the certain discovery of any peculiarities of physical constitution. This planet is quite often seen to pass between us and the sun, the transits usually occurring at intervals of three, seven, ten, or thirteen years. From a careful discussion of all the transits hitherto observed, Leverrier concluded that the motion of its perihelion is 36″ per century greater than the motion calculated from the attraction of all the known planets, and was hence led to the hypothesis that a group of small planets circulated between Mercury and the sun. But the most careful search by the best observers has uniformly failed to show any trace of such bodies and there are strong reasons for disbelieving in their existence. No satisfactory explanation of Leverrier's result has ever been given.



PLANETS SEEN IN QUADRATURE.

VENUS.

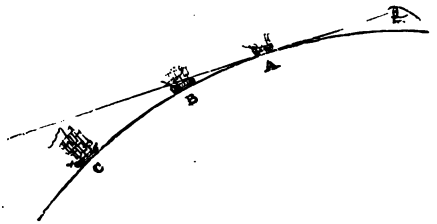
the second planet from the sun, is at times, next to the sun and moon the most brilliant object in the heavens. When east of the sun it is seen in the west, after sunset, as the evening star; and when west of him it rises before him as the morning star. Several astronomers have announced the existence of mountains twenty miles high in this planet; but the evidence is too weak to be relied on. Twice in every 120 years Venus passes between us and the sun.

These two planets, Mercury and Venus, have "phases" (like the moon), or certain positions in which the whole of the side illuminated by the sun is seen from the earth, and other positions in which it is seen sideways; the planet is then said to be in "quadrature," as may be seen at Q Q in the figure.

Mercury and Venus, being between the sun and the earth, are called "inferior" planets, while those whose orbits are outside that of the earth are called "superior" planets. When either of the inferior planets are between the earth and the sun, they are said to be in "inferior conjunction" (I C); and when on the opposite side, or behind the sun, so that a straight line from it to the earth would have to pass through the sun, then it is called being in "superior conjunction" (S C); at mid distance, either east or west, it is said to be in "eastern" or "western quadrature."

THE EARTH.

is the first planet accompanied by a moon. Its equator is inclined to the ecliptic, or the plane in which it moves round the sun, at an angle which in 1850 amounted to 23° 27′ 31″; and which is now diminishing at the rate of 47″ per century, to increase again in the course of ages, as it fluctuates between comparatively narrow limits. The earth's axis at the same time changes its direction very slowly in the heavens, describing a complete circle around the pole of the ecliptic in about 26,000 years, the time varying somewhat in consequence of the motion of the ecliptic itself. The change of seasons is due to the inclination of these two planes, the earth's northern hemisphere being turned towards the sun from March 21 to September 21, and its southern hemisphere being so turned the remainder of the year. About these two dates the plane of the earth's equator passes through the sun, and day and night are consequently equal all over the globe, whence the term 'equinox." The civil year has always been measured by the interval between the returns of the earth to the same equinox, because this return brings round the change of the seasons.



THE ROTUNDITY OF THE EARTH.

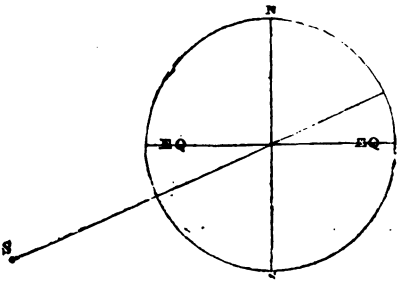
The personal interest we have in the earth demands that we should say rather more about it than our limited space would warrant our doing in the case of any of the other planets. The globe we inhabit is not a perfect sphere, but has a slightly flattened form, as though it had been compressed at the poles. The diameter at the poles is the smallest, and is 7,898 English miles, while that at the equator, its greatest, is 7,925 miles, being a difference of 27 miles.

The form of the earth has been demonstrated by accurate experiments and calculations, but there are many things we may observe convincing us of its rotundity. One of the most evident of these is the fact, that as a ship goes from the land the hull first disappears, then the lower sails, and lastly the tops; while a ship approaching the shore shows first the topsails and last the hull; see the illustration on this page, where A shows a ship on the horizon, B hull-down,

c out of sight. In the same way the tops of distant mountains are seen at sea long before the lower lands. Another proof is drawn from the fact that ships have sailed quite round the earth; by steering as nearly as possible in one direction they have arrived at the place from which they started.

A more striking proof, because it is demonstrated to the eye by nature itself, is that in the case of an eclipse of the moon the shadow of the earth thrown by the sun is always of a circular form; and as the phenomenon of an eclipse does not occur at fixed periods, but when the positions are relatively different, the shadow would vary in shape from a circle to an oval, or even a straight line, according to the angle presented to the surface of the moon, were the earth a disc, or of any other form but that of a sphere, which only can, under any possible circumstances, cast a circular shadow. Further proof, if any were needed, is in the fact that the fixed stars visible in the northern regions gradually recede from the view of the voyager proceeding into the equatorial regions, south of which he sees entirely different constellations.

The earth turns upon its axis every 23 hours, 56 min 4 sec., which constitutes a day, and makes one revolution round the sun in every 365¼ days, which make up a year; but the earth's axis is not at a right angle with an imaginary line drawn from the earth to the sun, but at an angle of 23 deg. 28 min. to it, as shown in the figure, where the line from N to S is the earth's axis of rotation, the line leading to S is the sun's direction, and EQ is the equator.

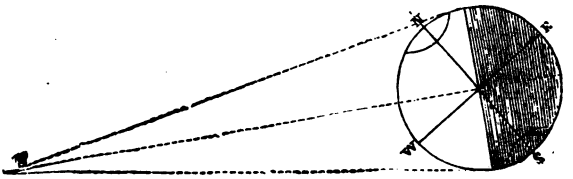


THE EARTH'S ROTATION.

The earth travels through space at the rate of more than a million and a half miles per day, besides the distance which each object upon it is traveled in its diurnal rotation (24,000 miles). At first, it would seem impossible that such a rapid motion should not be felt; but as the air and clouds and every object belonging to the earth moves with it, and the motion is perfectly smooth, it can only be perceived by looking at objects independent of the earth. If sailing on the water when it is quite smooth, and the land not very near, the ship seems to be stationary, and the objects on shore appear to pass along in an opposite direction to that in which the ship is going. It is the same with the earth: the sun which appears to move is stationary, while the earth is going round it, and the result is, while the earth turns round on its axis, the whole firmament appears to move: we lose sight of those stars which are to the westward, which are then said to "set," while those to the eastward, constantly coming into sight, are said to "rise," the whole appearing to pass from east to west, while in reality the earth's surface is passing from west to east. At the equator, or that part of the earth which lies midway

between the poles, the sun and stars appear to rise and set perpendicularly to the horizon, and at equal times above and below it; therefore it is twelve hours day and twelve hours night. In places not situated on the equator they do not rise and set perpendicularly to the horizon, but from portions of circles at greater or less altitudes in the heavens, and the nearer the observer is to either of the poles, the smaller the circle and the more of it is seen; so that at the poles, any star situated exactly overhead does not appear to move at all. This place in our hemisphere is called the north pole of the heavens, and the nearest star to it is called the "pole star," which neither rises nor sets, and, as it always keeps the same position, serves as a guide to mariners.

All this is the effect of the diurnal motion of the earth, its annual motion not affecting the position of the stars, they being at such an immense distance that the circle which the earth forms in passing round the sun—although nearly 200,000,000 miles across—is as a mere point in proportion. But not so with the sun: as before stated, at the equator it is twelve hours above the horizon, and the same time below it; now, as we approach towards the poles, it forms at each rotation an arc above the



THE DIURNAL MOTION OF THE EARTH.

horizon, lower and lower, until at the poles its daily rising and setting is lost altogether, and there would never be daylight there provided that the earth was only subject to the diurnal motion (see the annexed figure); but as the earth turns upon an oblique axis, the north and south poles share the blessing of daylight between them; so that through one-half of the earth's orbit the north pole is towards the sun, as shown in the the figure, and the south pole during the other half. There is therefore at the poles but one day and one night in the year—the day being summer and night winter. In less northern climates, as England, this exists to a much smaller extent; for half the year the sun is longer above than below the horizon, constituting our summer; the other half of the year the sun is longer below the horizon than above it, and this is winter. Hence, in each case, midway between, the sun is twelve hours above and twelve hours below the horizon, which occurs in spring and autumn, being called the "equinoxes" (equal nights); the vernal or spring equinox takes place on 21st of March, the autumnal on the 21st of September. The times just between these, when the sun is the longest or shortest time below the horizon, are called the summer and winter solstices, and occur on the 21st of December and the 21st of June.

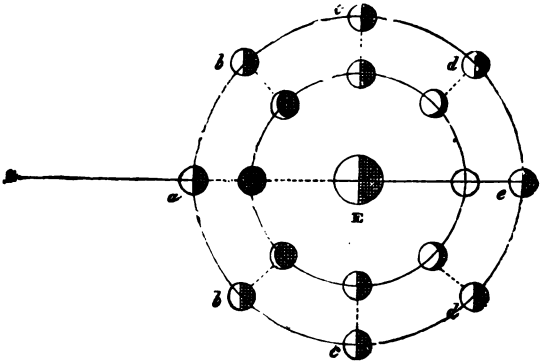
THE MOON.

The Moon, being the nearest of the heavenly bodies, is that one with the physical peculiarities of which we are best acquainted. She has the appearance of a perfectly arid desert, on which the most careful scrutiny has failed to reveal a trace of air, water or life. Her surface is broken up by great inequalities, entirely different in character from those on the surface of the earth. Instead of undulating hill and valley, with chains of mountains, we find saucer-shaped depressions, generally of considerable regularity, with flat bottoms, and mounds or hillocks, great and small, scattered over nearly the entire surface. Large regions are comparatively smooth, and from their dark color were supposed by the first users of telescopes to be seas. Several maps of her visible hemisphere have been prepared, on which many of the features are named after the great astronomers or philosophers of ancient and modern times. The moon's revolution on her axis coincides exactly with her mean motion around the earth, and consequently she always presents the same face to us. Her farther hemisphere is forever hid from view, but there is not the slightest reason to believe that it differs in any respect from the one we see. The size of the moon is such that her dark shadow cast by the sun is about 240,000 miles in length, narrowing down to a point at this distance. Whenever the earth is in the liae of this shadow we have an eciipse of the sun.

TELESCOPIC APPEARANCE OF THE CRESCENT MOON.

The moon having always one-half illuminated by the sun, while the other half is dark, presents different "phases" to us on the earth according to the position in which we view it; thus, in the next figure (see page 18), E represents the central position of the earth, and s the direction from which the light of the sun comes; the outer circle of moons represents the various real positions of that luminary with respect to the earth and sun, and the inner circle shows its appearance when in these various positions. When the moon is between the earth and the sun, as at *a*, it is said to be in "conjunction," and as the darkened side is towards the earth, of course it is not visible—this is "new moon" (a corruption of "no moon"); when at *b b*, but a small part of the illuminated half is seen, and it is then said to be "cresentic" (first and last quarter); at *c c*, half of the bright side is seen, the moon is said to be at "quadrature;" and the appearance is that of a "half moon;" at *d d*, the greater

part of the bright side is seen, and it is called "gibbous," and appears as a "three-quarter moon;" and at *e*, the whole of the illuminated side is seen—it is then "full moon," and is said to be in "opposition."



THE PHASES OF THE MOON.

CHAPTER III.

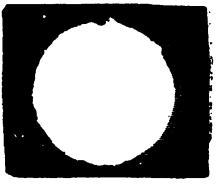
Mars—The Asteroids—Jupiter—Saturn—Uranus—Neptune—The Relative Size of the Sun and the Planets—Comets—The Physical Constitution of Comets—Practical Astronomy Theoretical Astronomy—The Ancient System—The Era of Copernicus and Kepler—The Era of Gravitation.

MARS.

Mars, the fourth planet from the sun, and the last of the inner group, has always been scrutinized by astronomers with the greatest interest, owing to the variegated character of its surface, and its seeming resem-

MARS AS SEEN THROUGH THE TELESCOPE.

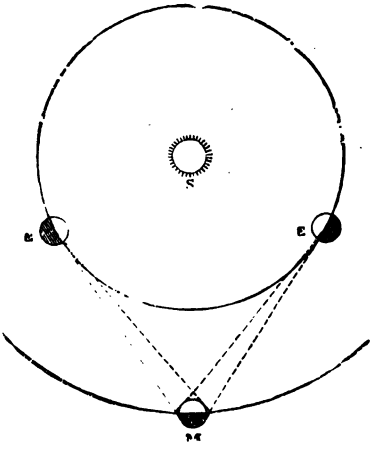
blance to the earth. The whole disc is clearly divided into light and dark portions, which have been supposed to be seas and continents, The supposed seas present a greenish hue, whilst the continents are reddish, and give rise to the peculiar appearance of the planet. Near each pole a brilliant white patch is seen, which is attributed to arctic snow and ice. The conclusion that the markings are due to land and water, snow and ice, is to be received with caution.



MARS.

As to the question of the planets being inhabited, of course it can never be answered with certainty; but it is a great deal more likely that they are than that the moon is, which, having neither water nor atmosphere, can hardly be supposed to give habitation to any beings similar or analagous to those on earth, while these possess a climate not greatly differing from that of the earth.

Mars has, at certain positions of the earth with respect to it, a partially "gibbous" form, that is, a small portion of the non-illuminated part comes within the lines of our vision. It is then of the form seen in first figure on this page. This, however, can only occur when the earth and the planet occupy positions somewhat near to that represented in the accompanying figure, in which S is the sun, E E opposite positions of the earth, and M Mars.



VIEWS OF MARS.

Between the orbits of Mars and Jupiter there is a ring of little planets clustering in one part of the system, called Asteroids, or Minor Planets. The number discovered up to May, 1877, was 172. Five to ten have been discovered, annually, for many years past. The total number probably amounts to several hundreds. As a general rule, their orbits are much more eccentric, and much more inclined to the ecliptic than those of the the major planets. Nothing is known of their physical constitution, their small size preventing any peculiarities of form and structure from being seen. CERES and VESTA are the largest of the group, their diameters being about 200 to 400 miles; the smallest—omitting some lately discovered—ATALANTA, MAJA and SAPPHO being from 20 to 40 miles; the discs are all so small as to defy exact measurement. A rough estimate of the diameters can, however, be made from the amount of light

they reflect. Their diameters are supposed to range from thirty or forty miles to three hundred or four hundred. These estimates are founded not on measurement, but on the apparent brilliancy of the bodies, and are therefore very uncertain.

There is a celebrated hypothesis of Olbers, that these bodies are the fragments of a planet which was shattered by some unknown force. Recent researches have rendered this hypothesis very improbable, and it has almost ceased to be a matter of discussion amongst astronomers.

JUPITER.

Jupiter, exceeding the earth in bulk thirteen hundred times, and the next planet in order, is the largest of the system, so that, notwithstanding its great distance, it is brighter than any other star or planet except Venus. Its appearance through the telescope is quite peculiar, a dark band or belt being always visible on each side of its equator, and sometimes another near the pole. When closely scrutinized, these belts are found to be of irregular shape, and ragged, cloud-like formation. They are subject to occasional changes in color and appearance. It is doubtfal whether the solid body of Jupiter is visible at all: in fact, it is not certain that it has any solid body. It has been supposed that the belts are clouds floating in the Jovian atmosphere, but all such analogies between the surfaces of the planet and that of our own globe are little better than pure speculation.

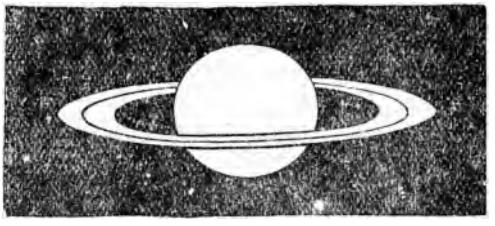
JUPITER SEEN THROUGH THE TELESCOPE.

Jupiter is accompanied by four satellites, which were discovered by Galileo when he first pointed his telescope at the planet. They are about as bright as the smallest stars visible to the naked eye, and could therefore be seen without a telescope if they were not overpowered by the brilliancy of the planet. Indeed, it is claimed that they actually have been seen by unusually good eyes; and some of these claims are too strongly supported to be lightly set aside. Most of the satellites pass through the shadow of the planet, and suffer a consequent eclipse in every revolution. These eclipses, being visible at the same time all over the globe, furnish one of the easiest methods of roughly determining the longitude, but very little accuracy can be thus attained. By these eclipses the progressive motion of light was first determined by Roemer.

SATURN.

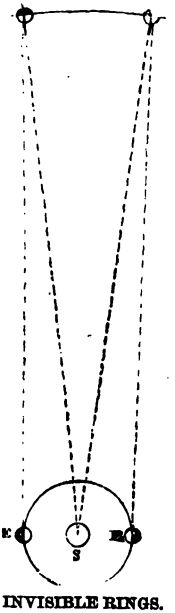
Saturn, the sixth planet from the sun, with his rings and satellites, is perhaps the most striking teiescope object in the heavens. He has belts like Jupiter. but much fainter. His rings are very bread and thin, their edges being turned towards the planet. Nothing like these rings has

been seen anywhere else in the heavens; and the question, What keeps them from falling on the planet? is one which has occupied several



SATURN AS SEEN THROUGH THE TELESCOPE.

generations of mathematicians and astronomers, without being definitely solved. The corpuscular or cloud theory is that now most generally admitted. The theory is that the rings are not solid or liquid masses at all, but only a vast swarm— or, rather, two or three vast swarms—of very minute satellites, too small to be seen separately, but so numerous that they present the appearance of a continuous body. Just within the inner bright ring is a faint, dusky ring, which this theory explains very easily by supposing the swarm of satellites to be here so thin that they are scarcely visible, and permit light to pass freely between them. For a short time before the equinoxes of Saturn, the rings become invisible, owing to the earth and the sun being on opposite sides of them, as may be seen in the figure, so that the darkened side is turned towards the earth, and the edge, which is the only part illuminated, is towards the sun. Saturn is accompanied by eight satellites, twice as many as are known to surround any other planet, but none of them present characters of special interest.



INVISIBLE RINGS.

URANUS.

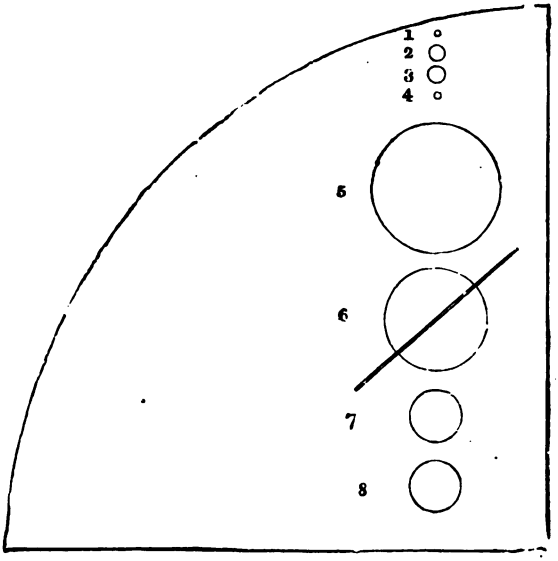
Uranus was discovered by Sir William Herschel in 1781. It had frequently been observed before that time, but was not known to be a planet. It is accompanied by four satellites, two of which were discovered by Herschel.

NEPTUNE.

Neptune was discovered in 1846 by one of the most remarkable achievements in the history of Astronomy, its position in the heavens having been calculated by Leverrier and Adams before its existence was known. It is attended by one satellite. Both Uranus and Neptune are too far

off, both from the earth and the sun, to admit of any peculiarities being seen on their discs, but the spectroscope shows them both to be surrounded by atmospheres of great density and remarkable constitution, in which carbonic acid is perhaps the principal ingredient.

The following figure represents the relative size of the sun and the planets that revolve round it:



PLANETS COMPARED WITH A QUARTER OF THE SUN.

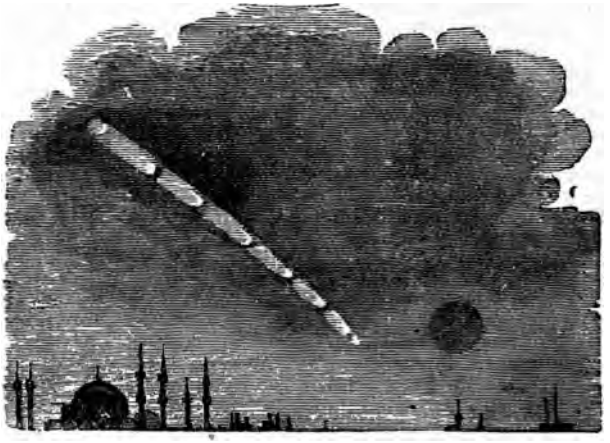
1. Mercury.	5. Jupiter.
2. Venus.	6. Saturn.
3. The Earth.	7. Uranus.
4. Mars.	8. Neptune.

Besides the planets which we have described, quite a number of comets are known to be members of our solar system, and a great number of others are suspected to be such, even though their time of revolution is so great that they have never been recorded as seen but once. The general rule is, that a comet comes into view suddenly and unexpectedly, falling nearly towards the sun, as if dropped from an infinite distance. It whirls around the sun in a parabolic orbit, and flies off into space nearly in the direction from which it came.

If astronomers have an opportunity for observing it carefully for several months, they can tell whether it is or is not flying so fast that the

attraction of the sun will never bring it back again. It is thus definitely ascertained that the great comet of 1858 will return, in consequence of the sun's attraction, in about 1,950 years, probably between the years 3800 and 3820, after flying off into space to the distance of fifteen thousand million miles.

The physical constitution of comets is still one of the enigmas of astronomy. Large comets are generally found to consist of three distinct formations: 1. A small, bright, but ill-defined nucleus; 2. A round mass of hazy nebulous or foggy matter surrounding this nucleus, and indeed seeming to rise from it; and 3. A tail of extremely rare matter but of enormous length, extending off from the comet in a direction opposed to the sun, growing wider and fainter as it extends, until it gradually



HALLEY'S COMET.

becomes invisible. But the smallest telescopic comets often exhibit neither nucleus nor tail, but consist of an irregular, ill-defined, nebulous mass, perhaps brighter at one point. As the comet approaches the sun the tail develops enormously, and frequently shows itself, when none was visible at a distance. It is now generally understood that the tail of a comet is not a permanent appendage, but a stream of finely divided matter continually driven off from the comet into space by some repulsive force residing in the sun, the nature of which is not yet understood. It may be compared to the stream rising from a boiling pot, or to smoke from a chimney. If this view be correct—and it can hardly be disputed—all the comets are continually evaporating into space, and must in time be entirely dissipated.

This theory of the constant dissipation of comets has recently received a striking confirmation in the ascertained coincidence of meteor streams with the orbits of comets, and in the disappearance of Biela's comet from the heavens. It has long been known that we have either a meteoric shower or an unusual number of meteors every year on the nights of August 9 and November 14, and they are now found to be produced by the earth's atmosphere meeting a swarm of very minute particles which move in the respective orbits of two comets. The particles are supposed to be the fragments or dust of the comets which have been separated in the course of ages.

We have now given the student the briefest possible description of the material universe as discovered by the telescope, and what we have said may be considered as an epitome of descriptive astronomy.

Practical Astronomy teaches the construction and use of such instruments as the telescope, the transit instrument, the meridian circle, and the zenith telescope, and the calculation of the observations made with them. The usefulness of practical astronomy and the perfection it has attained, may be judged from this consideration; take an astronomer blindfolded to any part of the globe, give him the instruments we have mentioned, a chronometer regulated to Greenwich time and the necessary tables, and, if the weather be clear so that he can see the stars, he can in the course of twenty-four hours tell where he is in latitude and longitude within a hundred yards.

For Theoretical Astronomy, though scientifically the most important branch of the subject, we can do no more than give the reader a general idea of what it has been and is. The science has existed in a rude state from the earliest ages of which we have any written record; indeed, astronomy has very properly been called the most ancient of the sciences. Its progress may conveniently be divided into three eras.

The first era is that of the ancient system, in which the earth was considered as the centre of the universe, and all the heavenly bodies were believed to revolve about it in the course of twenty-four hours. Far from the truth as the system was, the ancients discovered the rotundity of the earth and the difference of local time, or of the hour of the *day* between places of different longitudes, knew the cause and laws of eclipses, and constructed tables which gave the motions of the sun, moon and planets with considerable accuracy. The annual motion of the earth round the sun produces an *apparent* annual revolution of the sun among the stars, and this apparent revolution was perfectly understood in the earliest historical times. The annual course of the sun was mapped out on the heavens and divided into twelve signs, known as "signs of the zodiac." The year was known to consist of 365¼ days, and the connection of the seasons with the position of the sun in the zodiac was fully understood and described. The great body of ancient knowledge on these subjects has been preserved in the "Almagest" of Ptolemy, a work which remained an authority in astronomy for nearly 1600 years.

The second era was that of Copernicus and Keppler, in which the sun was assigned to its true place as the centre of the solar system; the earth was classified as one of the planets moving around it; and all the orbits of these bodies were found to be elipses having the sun in one focus.

A comparatively simple geometrical system was thus introduced, which did away with the complicated epicycles of Ptolemy, and at the same time represented the apparent motions with much more accuracy. Indeed, if the orbits had really been perfect ellipses, hardly any further advance in accuracy would have been made possible even by the discovery of gravitation.

The third era is that of gravitation, in which all the heavenly bodies are considered as flying through space with perfect freedom, but each gravitating towards all the others. By this theory the courses of all the planets and of the moon and many of the statellites are predicted with an astonishing degree of accuracy. The first thing which gravitation settles is the motion of the earth itself on its axis. The daily revolution around its axis seems to take place with perfect regularity, but the axis itself is subject to several very slow motions, which make its direction decidedly different in the course of ages. These motions cannot well be described without a globe; but as the whole earth and the instruments with which observations are made partake of them, they change all observed positions of the heavenly bodies, and these changes must be carefully allowed for in all calculations.

The Copernican system and the theory of gravitation have reduced theoretical astronomy almost to branches of pure mathematics—mechanics, geometry, and trigonometry. The system is quite simple in its original conceptions, but very complex when we descend to minute details.

CHAPTER IV.

Marvelous Distances and Velocity—The History of Astronomy—The Story of the Tides.

THE PLANETS.

Could we leave the earth, traverse space, and finally reach the planets, when at their least distance from the earth, by traveling night and day at the rate of thirty miles an hour, we could not reach the

Sun in less than	347 years.
Mercury in less than	179 years.
Venus in less than	88 years.
Mars in less than	237 years.
Jupiter in less than	1,555 years.
Saturn in less than	3,162 years.
Uranus in less than	6,644 years.
Neptune in less than	10,005 years.

	A.D.
Various forms of telescopes and other instruments used in astronomy invented	1608–40
Cartesian system published by Des Cartes	1637
The transit of Venus over the sun's dise first observed by Horrocks	Nov. 24, 1639
Cassini draws his meridian line, after Dante	1655
Aberration of light of fixed stars discovered by Horrebow	1659
Huyghens completes the discovery of Saturn's ring	1654
Gregory invents a reflecting telescope	1663
Discoveries of Picard	1699
Discoveries of Roemer on the velocity of light, and his observation of Jupiter's statellites	1675
Greenwich Observatory founded	1675
Motion of the sun round its own axis proved by Halley	1676
Newton's *Principia* published	1687
Catalogue of the stars made by Flamsteed	1688
Cassini's chart of the full moon executed	1692
Satellites of Saturn, &c., discovered by Cassini	1701
Halley predicts the return of the comet (of 1758)	1705
John Harrison produces chronometers for determining the longitude, 1735 *et seq.*, and obtains the reward	1764
"Nautical Almanac" first published	1767
Celestial inequalities found by La Grange	1780
Uranus and statellites discovered by Herschel	March 13, 1781
Mecanique Celeste, by La Place, published	1796
Royal Astronimical Society of London founded, 1820; chartered	1831
Beer and and Madler's map of the moon published	1834
Lord Rosse's telescope constructed	1828–45
The planet Neptune discovered	Sept. 23, 1846
Bond photographs the moon	1851
Spectrum analysis applied in astronomy	1861
Large photograph of the moon by Warren De la Rue	1863
Two statellites of Mars discovered by Prof. Asaph Hall, at Washington, U. S.	Aug. 11, 18, 1877

THE STORY OF THE TIDES.

From a scientific point of view, the work done by the tides is of unspeakable importance. Whence is this energy derived with which the tides do their work? If the tides are caused by the moon, the energy they possess must also be derived from the moon. This looks plain enough, but unfortunately it is not true. Would it be true to assert that the finger of the rifleman which pulls the trigger supplies the energy with which the rifle bullet is animated? Of course it would not. The energy is derived from the explosion of the gunpowder, and the pulling of the trigger is merely the means by which that energy is liberated. In a somewhat similar manner the tidal wave produced by the moon is the means whereby a part of the energy stored in the earth is compelled to expend itself in work. Let me illustrate this by a compartson between

the earth rotating on its axis and the fly-wheel of an engine. The fly-wheel is a sort of reservoir into which the engine pours its power at each stroke of the piston. The various machines in the mill merely draw off the power from the store accumulated in the fly-wheel. The earth is like a gigantic fly-wheel detached from the engine, though still connected with the machines in the mill. In that mighty fly-wheel a stupendous quantity of energy is stored up, and a stupendous quantity of energy would be given out before that fly-wheel would come to rest. The earth's rotation is the reservoir from whence the tides draw the energy they require for doing work. Hence it is that though the tides are caused by the moon, yet whenever they require energy they draw on the supply ready to hand in the rotation of the earth. The earth differs from the fly-wheel of the engine in a very important point. As the energy is withdrawn from the fly-wheel by the machines in the mill, so it is restored thereto by the power of the steam engine, and the fly-wheel runs uniformly. But the earth is merely the fly-wheel without the engine. When the work done by the tides withdraws energy from the earth that energy is never restored. It therefore follows that the earth's rotation must be decreasing. This leads to a consequence of the most wonderful importance. It tells us that the speed with which the earth rotates on its axis is diminishing. We can state the result in a manner which has the merits of simplicity and brevity. The tides are increasing the length of the day. At present, no doubt, the effect of the tides in changing the length of the day is very small. A day now is not appreciably longer than a day a hundred years ago. Even in a thousand years the change in the length of a day is only the fraction of a second. But the importance arises from the fact that the change, slow though it is, lies always in one direction. The day is continually increasing. In millions of years the accumulated effect becomes not only appreciable, but even of startling magnitude.

The change in the length of the day must involve a corresponding change in the motion of the moon. If the moon acts on the earth and retards the rotation of the earth, so conversely, does the earth react upon the moon. The earth is tormented by the moon, so it strives to drive away its persecutor. At present the moon revolves round the earth at a distance of about 240,000 miles. The reaction of the earth tends to increase that distance, and to force the moon to revolve in an orbit which is continually getting larger and larger. As thousands of years roll on, the length of the day increases second by second, and the distance of the moon increases mile by mile. A million years ago the day, probably, contained some minutes less than our present day of twenty-four hours. Our retrospect does not halt here; we at once project our view back to an incredibly remote epoch which was a crisis in the history of our system. It must have been at least 50,000,000 years ago. It may have been much earlier. This crisis was the interesting occasion when the moon was born. The length of the day was only a very few hours. If we call it three hours we shall not be far from the truth. Perhaps you may think that if we looked back to a still earlier epoch, the day would become still less, and finally disappear altogether! This is, however not the case. The day can never have

been much less than three hours in the present order of things. Everybody knows that the earth is not a sphere, but there is a protuberance at the equator, so that, as our school books tell us, the earth is shaped like an orange. It is well known that the protuberance is due to the rotation of the earth upon its axis by which the equatorial parts bulge out by centrufugal force. The quicker the earth rotates the greater is the protuberance. If, however, the rate of rotation exceeds a certain limit, the equatorial portions of the earth could no longer cling together. The attraction which united them would be overcome by centrifugal force, and a general break up would occur. It can be shown that the rotation of the earth when on the point of rupture corrosponds to a length of a day somewhere about the critical value of three hours, which we have already adopted. It is therefore impossible for us to suppose a day much shorter than three hours.

Let us leave the earth for a few minutes and examine the past history of the moon. We have seen the moon revolve around the earth in an ever-widening orbit, and consequently the moon in ancient times must have been nearer the earth than it is now. No doubt the change is slow. There is not much difference between the orbit of the moon a thousand years ago and the orbit in which the moon is now moving. But when we rise to millions of years the difference becomes very appreciable. Thirty or forty millions of years ago the moon was much closer to the earth than it is at present; very possibly the moon was then, only half its present distance. We must, however, look still earlier, to a certain epoch not less than fifty millions of years ago. At that epoch the moon must have been so close to the earth that the two bodies were almost touching. Everybody knows that the moon revolves now around the earth in a period of seventy-seven days. The period depends on the distance between the earth and the moon. In earlier times the month must have been shorter than our present month. Some millions of years ago the moon completed its journey in a week, instead of taking twenty-eight days as at present. Looking back earlier still, we find the month has dwindled down to a day, then to a few hours, until at that wondrous epoch, when the moon was almost touching the earth, the moon spun round the earth every three hours.

In those ancient times I see our earth to be a noble globe as it is at present. Yet it is not partly covered with oceans and partly clothed with verdnre. The primeval earth seems rather a fiery and half-molten mass, where no organic life can dwell. Instead of the atmosphere we now have, I see a dense mass of vapors, in which, perhaps, all the oceans of the earth are suspended as clouds. I see that the sun still rises and sets to give the succession of day and of night, but the day and night together only amount to three hours instead of twenty-four. Almost touching the chaotic mass of the earth is a much smaller and equally chaotic body. Around the earth I see the small body rapidly rotating. The two revolves together, as if they were bound by invisible bonds. The smaller body is the moon.

SECRETARY'S REPORT.

CLEVELAND, OHIO, April 1st, 1882.

Mr. President and Members of The Educational Bureau:

It is twelve weeks this evening since we began, in the People's Tabernacle, our work of practical instruction and popular entertainment for the busy people of our growing city. From the outset the management has been stimulated to its best by the unanimous encouragement received from business men and their employees, and the cordial endorsement of the movement by both the press and the general public. Even "Old Probabilities" favored our enterprise with the best of weather. It is doubtful if, in any country, so large a class of attentive and earnest students ever assembled in a single room in search of knowledge for so many consecutive Saturday evenings. Knowledge, like virtue, is its own reward. The attendance has varied from 2,500 to over 4,000, and the average number of persons at each of the twelve entertainments exceeded 3,000 by actual count. Total number of persons in attendance, during the course, about 37,000. Every work place in the city has sent its large delegations. Great crowds have come in from all the suburbs. Many work people actually go without their suppers, or eat the crusts left in the dinner pail, that they may get good seats. No audience of the kind ever presented a neater appearance, or preserved such perfect decorum.

It is safe to state that there has never been given so much for so little, to so many; and the hearty appreciation of the audiences has been apparent in every face.

Beginning January 14th, and ending April 1, the Bureau has given three Grand Concerts, nine Lectures, ten Musical Preludes, and printed for free distribution to its patrons nearly forty thousand "Books for the People," on popular topics. (The twelve numbers make a volume of 376 pages.)

Over three hundred trained singers generously gave their services. The Bureau furnished all the singers and lecturers with bouquets.

On Saturday afternoon, February 11th, Prof. W. C. Richards, of Chicago, gave to the children of Cleveland a Monster Matinee, under the auspices of the Bureau—admission, five cents. The Professor exhibited "The World Wonder" to over 5,000 boys and girls, who carried away as many thousand beautiful pictures, besides having their knives and scissors magnetized, free of charge. Thousands of children were unable to get inside the building.

We give a schedule complete on the next page.

SCHEDULE.

DATE.	MUSICAL PRELUDE.	CONCERTS AND LECTURES.	CONDUCTOR AND SUBJECTS.
1882.			
January 14		Grand Concert	Prof Alfred Arthur, Conductor
" 21	Cleveland Grays' Orchestra	Dr. J. H. Vincent	The Every Day College
" 28	Cleveland Grays' Orchestra	Hon. George M. Towle	Gambetta
February 4	Arion Club	Prof. W. C. Richards	Fascinating Electric Forces
" 11	Cleveland Grays' Orchestra	Prof. W. C. Richards	Wonders of Air and Water.'
" 18	Mendelssohn Club	Rev. T. De Witt Talmage, D.D.	Big Blunders
" 25	Cleveland Grays' Orchestra	Mrs. Mary A. Livermore	The Boy of To-day
March 4	Tennessee Colored Singers	Dr. A. A. Willits	Sunshine, or the Secret of a Happy Life.
" 11	Cleveland Grays' Orchestra	Grand Concert	The Fisk University Jubilee Singers
" 18	Mixed Quartette	Mr. Harry W. French	Beneath the Himalayas, India
" 25	Annual Meeting	Grand Concert.	Prof. N. Coe Stewart, Conductor
April 1	New Orleans University Singers.	Mr. John B. Gough	Peculiar People

DATE.	PRESIDING OFFICER.	"BOOKS FOR THE PEOPLE."	PEOPLE PRESENT.	No. BOOKS ISSUED.
1882.				
January 14	Gen. M. D. Leggett	Music and its Influence	2,810	3,000
" 21	Mayor R. R. Herrick	Popular Proverbs	2,401	3,000
" 28	Mr. L. W. Day	Familiar Objects	2,500	3,000
February 4	Mr. R. F. Smith	George Stephenson	2,453	3,000
" 11	Gen. M. D. Leggett	History of England	2,702	3,000
" 18	Mr. Henry S. Whittlesey	Which Wins—Mind or Stimulant?	3,650	3,300
" 25	Hon. W. N. Hudson	Simple Suggestions Concerning Health	3,088	3,000
March 4	Mr. J. F. Holloway	Familiar Quotations	3,075	3,000
" 11	Dr. Samuel Wolcott	Southern Education	4.011	3,000
" 18	Rev. F. W. Hosmer	Alexander Von Humboldt	2,520	3,000
" 25	Gen. M. D. Leggett	Celebrated Musicians	3,730	3,500
April 1	Mr. Dan P. Eells	Astronomy	4,075	4,000
	Total		37,015	37,800

The Treasurer's condensed report, on page 34, speaks for itself.

The Educational Bureau will give during the season of 1882-83, twenty popular entertainments, ten to be given during next winter at the People's Tabernacle, and ten concerts in the Public Square during the month of June, July and August, summer of 1883. The price per entertainment will be reduced from 8½ to 7½ cents, or twenty entertainments for $1.50, which will be the price of the regular course tickets The course tickets will contain the winter's programme complete.*

We suggest that next season the "Musical Prelude" should begin at 7:15 o'clock, and the Concert, or Lecture at 8. Lectures should close at 9:15, and other Entertainments at 9:30 sharp, when the door-keepers should be instructed to open all the doors; then appointments with street railways and others can be kept promptly.

It is sincerely hoped that plans will be matured for the erection, within five years, of a suitable building, centrally located, in which the citizens of Cleveland shall have a People's Hall on the ground floor, with every modern improvement, and the capacity to seat comfortably not less than five thousand persons. Such a Hall (capable of being divided) has become an absolute necessity, for National and State Conventions, both political and religious, and for Concerts, Lectures, &c., Small halls, on the second or third floors, endanger lives, and force high prices of admission.

Besides a Public Hall, Cleveland's building should contain an Art Gallery, a miniature Centennial Exhibition, embracing an ideal sample of everything made and grown in Northern Ohio; and a Mechanic's Institute, where young men and women shall receive instruction in the arts of design, mechanical drawing, wood carving, telegraphing, cookery, &c., &c. The inexorable laws of trade force cities, like firms and individuals, into sharp competition. Quicken the intelligence of our business men and employees, thereby increasing the quality and demand for goods, and our promising city will speedily rank all others as a manufacturing center. We believe it the best policy for a young city to group several societies into one grand structure, fire proof, and architecturally beautiful. Out of the British Museum of London came the great National Picture Gallery and the wonderful Kensington Museum. Of course, an organization must first be incorporated, with well-known gentlemen as trustees, in whom title to property could be

*For details, see "Special Announcement to Ticket Holders," last pages.

safely vested. I believe our employees alone will give fifty thousand dollars, perhaps more towards such a worthy object, say a single day's work a year for five years. Several prominent Societies will join in the movement; and, if assisted by a generous public, such an edifice will be the pride of the Forest City. Preliminary steps in this important matter will soon be taken.

Respectfully submitted,

C. E. BOLTON, Sec.

TREASURER'S REPORT.

THE CLEVELAND EDUCATIONAL BUREAU IN ACCOUNT WITH W. H. DOAN, TREASURER.

RECEIPTS.

Jan.		By Cash Taylor & Boggis	$ 2 00	
Feb.	11.	" Total receipts from Children's Matinee.	251 35	
Mar.	25.	" Receipts sale of 3719 Tickets 15c	557 85	
Apr.	1.	" Receipts sale of 400 fifteen-cent Tickets this evening, Estimate*	60 00	
"	1.	By Total Receipts Sale of 3657 Regular Course Tickets, at $1	3657 00	
"	1.	" Total Receipts from Advertising on covers of the Books	315 00	
		Total Receipts		$4843 20

DISBURSMENTS.

		By Cash expense three Grand Concerts	$ 400 00	
Feb.	11.	" Total expense Children's Matinee	181 56	
March	23.	" " Nine Lectures	917 40	
April	1.	" " Ten Musical Preludes	219 83	
"	1.	By Total expense 37,800 "Books for the People"	1125 00	
"	1.	By W. H. Doan rent of Tabernacle thirteen times	204 00	
"	23.	By S. E. Stone's Services, Collecting, &c.	150 00	
April	1.	By Electric Light & Power Co. Expense electric light	90 00	
"	1.	By Total expense Advertising, Printing, &c., Estimate*	499 88	
		Total Disbursements		$3787 67
April	1.	Balance in Treasury (?)		1055 53
				4843 20

*On settlement of a few unadjusted bills the account will be properly audited, and presented through the press to the public. The balance will be deposited in the Society for Savings to the credit of The Cleveland Educational Bureau. The Officers make no charges for their services.

W. H. DOAN, Treasurer.

PROSPECTUS

OF

THE PEOPLE'S COLLEGE ENTERTAINMENTS,

1882-83.

Special Announcement to the Ticket Holders and their Friends:

The number of popular entertainments given by the Cleveland Educational Bureau during the year 1882–83 will be increased to twenty, ten of the best to be given during next winter in the People's Tabernacle, and ten concerts in the Public Square during the months of June, July and August, summer of 1883. The price per entertainment will be reduced from 8⅓ cents to 7½ cents, or twenty entertainments for $1.50, which will be the price of regular course tickets.

SINGLE TICKETS, TWENTY-FIVE CENTS.

The Bureau contemplates organizing and equipping a first-class band for use at the indoor and outdoor popular concerts.

The popular features of the "Musical Prelude" and "Books for the People" will be both continued and improved.

At present we cannot give complete dates or subjects. Changes may occur.

The management proposes making the following course of entertainments superior to any similar course in the country. The price of the course ticket is $1.50, twenty-five cents payable Saturday evening, April, 1st, to the usher, who will give a receipt for same, and a ticket which is deliverable at the Public Library, corner Euclid avenue and Erie street, October 1st, when the balance one dollar and twenty-five cents is payable.

The opportunity of subscribing for an option of paying for or forfeiting tickets prior to October 10th, will be given on Saturday evening, April 1st, to the present ticket holders, who may also subscribe for their friends. The name, address and occupation should be plainly written on the accompanying blanks, which must be handed to the ushers this evening. If you haven't a blank or pencil, please raise the hand and the usher will furnish one.

The management respectfully solicits all ticket holders to write on the back of the ticket blank any suggestions which will make the work of the Bureau more effective for good.

What Co-operation in Education and Entertainment Saves.

COURSE CLOSING APRIL 1.

Fair Valuation of the "Books for the People," each, (twelve Nos., total pages, about 400)..	$0.15	
Musical preludes, each.....	.25	
Lectures and Concerts, each.....	.50	
Total value of each entertainment.		$0.90
Value of 12 entertainments at $0.90.....	$10.80	
Less price of present course ticket.....	1.00	
Saving on 3,657 course tickets at.....	$9.80	$35,838.00
Balance in treasury, more or less, as profit.....		1,155.00
Grand total of savings on present course to ticket holders.....		$36,993.00

No further proof is needed to show why speculators engage in entertaining the public. The profits of the Bureau will be used as a guarantee fund, which we hope eventually will be applied towards a suitable building for the "People's College," and other purposes.

WINTER COURSE.

FIRST TERM.—Saturday evenings from November 11th to Dec. 9.

1. *Henry Ward Beecher.* (Lecture new and practical.)
2. *Grand Art Exhibition.* Four days. (The course ticket good for single admission on any one of the exhibition days or evenings.)
3. Not Settled.
4. *Free Trade vs. Tariff.* (This burning question will be debated by men of National reputation.
5. Grand Concert.

Five Week's Vacation.

SECOND TERM. From Jany 13 to Feby 10, 1883.

1. *Grand German Concert.*
2. *Gov. A. H. Colquitt,* of Georgia. "Resources and Needs of the South."
3. Not Settled.
4. *From St. Petersburg to Constantinople.* (Illustrated.)
5. *A Grand Military Night.*

SUMMER COURSE.

Ten Popular Concerts on the Public Square during the months of June, July and August, summer of 1883. If seats should be furnished then the holders of regular course tickets will be entitled to them free; others will be charged from five to ten cents extra for each concert.

C. E. BOLTON, Manager.

THE

A. S. HERENDEN FURNITURE CO.

114, 114½ and 116 Bank Street,

RETAIL EVERY DESCRIPTION

THIS SOLID WALNUT DRESSING BUREAU, ONLY $6.00.

Good Cane Seat Chairs, 50c each.
Hard Wood Bedsteads, $2.50 each.
Good Spring Bed Bottoms, $2.00 each.
Fine Mattresses, $2.50 each.

Furniture, Mattresses and Looking Glasses,

AT LOWEST WHOLESALE PRICES.

Goods sold on the Installment Plan at Cash Prices.
We guarantee a saving of at least 25 per cent.
Goods delivered free to any part of the City.

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ITS SIMPLICITY, ITS DURABILITY,
ITS GREAT RANGE OF WORK,

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THE SUCCESSFUL INAUGURATION

OF

"THE PEOPLE'S COLLEGE."

From the Cleveland Leader.

As Secretary Bolton said in introducing the grand concert at the Tabernacle last evening, that the success of the Cleveland Educational Bureau is assured there is no longer any doubt. People began gathering as early as 7 o'clock, and at 8 the great Tabernacle was so crowded that many of the unfortunate throng which came late had to be content with standing room only. There were no reserved seats, however, and those who had to stand have only themselves to blame for last night's experience, and will only have to come earlier to fare better in the future. The occasion was an auspicious one, but there was no pretense to grandeur in the surroundings; on the contrary, everything was in keeping with the object of the Bureau, which is to furnish to people who cannot afford to pay the high price usually charged for such entertainments, opportunities never before accorded them. Every detail was complete, however, and the great crowd was easily handled by the fourteen ushers, from among Cleveland's business men, each of whom was kept unusually busy.

Beyond the carpeting of the stage and the placing of a beautiful floral lyre near its central front, there was no seeking after effect, unless the placing of the four new Brush electric lights, which lighted the auditorium as the music did the souls of the auditors may be put under that classification.

A HISTORY OF MUSIC.

Upon each chair was placed "A Brief History of Music," the first number of a series of "Books for the People," in pamphlet form. The little book is a terse and complete history of music, form the morning of music down to the present time. It embraces in detail music in general, the antiquity of music, music in the land of Muses, and in Western Europe, and then handles, in a scholarly manner, the reformation period and the great influence of music. The book is an excellent one, well worthy of reading and preservation, and should not be laid aside as worthless, because free. It is understood that books such as this will be issued and circulated at each of the twelve entertainments.

SECRETARY BOLTON'S SPEECH.

At 8:30 o'clock Mr. C. E. Bolton, secretary and manager of the Bureau, arose, and after speaking of the pleasure afforded by the great patronage bestowed upon the worthy object, said:

"Emerson says: 'If you wish success, succeed.' Surely, at the outset the financial success of the Bureau seems guaranteed by your liberal patronage of tickets. Humanity expects an honest equivalent for its money, and this the management will try to furnish. The policy of no reserved seats or complimentary tickets makes everybody feel as good as his neighbor. We all are not unlike the Irish woman who said to the shoe dealer 'Niver moind the size, sir, the biggest for the money.' If some of your seats tonight are not quite satisfactory, please come earlier next Saturday evening and take first choice.

"These two bullets were purchased as mementoes of my visit to the famous battlefield at Waterloo. The larger one was used in English rifles; the smaller in French rifles. Returning to Birmingham I learned that the supply of genuine Waterloo bullets was exhausted years ago, and that an enterprising firm of that city did a profitable business in furnishing relics of battlefields to curiosity hunters like myself.

"The energy and generosity of Englishmen is astonishing. It is said that they send missionaries to convert heathens who actually worship idols made at Birmingham. This, of course, keeps business lively. So varied and extensive are the manufacturing interests of that city, the size of Chicago, that Lord Palmerston called it 'the Toy shop of the World.' Pins, pens, tacks, screws, guns, iron bedsteads, steam engines, in fact, every metallic product is there produced by shiploads.

"Cleveland more than any other city, I believe, is to rival and finally surpass Birmingham. Here naturally meet an unlimited supply of the best copper and iron ores and coal. Here is concentrating the wealth of the lumber, iron, coal, and oil regions of the West. Here business men and farmers will retire to educate their children. Already the manufacturers of New England have begun to make this, the metropolis of the Western Reserve, their new base of operations. Wealth accumulated by active lives will not neglect liberal investment in profitable manufacturing.

"The greatest need of Cleveland today is the varied education of her people. Fully 80,000 of our citizens are of foreign parentage. As we quicken the intelligence of business men and employes, so we shall increase the quality and demand for our goods; thus enlarging our boundaries. Fine art abroad and largely at home finds expression in every branch of trade, and it calls for highest skill. The exquisite silver-plated goods of Birmingham and Meriden have a world-wide reputation.

"Two hundred thousand of the smallest screws used in our watches make a pound, and are worth $3,000. A single pound of balance or hair springs, 50,000 in number, is worth $8,000. Two tons of our Lake Superior iron ore, worth fifteen dollars on our docks, made into watch screws, allowing one-half for wastage, would sell for about six millions of dollars, and a ton of balance springs will bring sixteen millions, or about twenty-five times as much as a ton of fine gold. A car load of iron ore, properly treated, therefore, wonderful though it seems, would purchase Cleveland entire.

"Doubtless this is an extreme case, butthe value of iron ore is quadrupled many times when worked into common wood screws, hardware, steel rails, *locomotives, etc.*

"One third of the iron ore produced in this country comes from Michigan and Ohio. Also much valuable copper from Michigan. Most of these precious metals pass on to enrich scores of distant cities. Who then dares declare the possibilities which are in easy reach of Cleveland, provided we school ourselves to the task? New railroads and gigantic iron ships already await our development. The inventive ability per capita of the West surpasses that of the East.

"In the South only one person in sixteen thousand takes out a patent, while to the North is issued a patent to every fifteen hundred. This tenfold mental activity applied to our boundless resources, and we have nothing to fear from any quarter of the globe, except ignorance.

"He rules who reads. Eventually Cleveland will have combined in an employes' or people's college, the best feature of the Mechanics' Institutes of Europe, and of the Lowell and Cooper's Institutes of America. Cleveland needs to adopt the electric motto of Birmingham, 'Forward!'

"I now take pleasure in introducing to you the president of the Cleveland Educational Bureau, who will preside on this occasion. He is not only deeply interested in all educational questions, but has faithfully served his country as a soldier and commissioner of patents, and is also president of the Brush Electric Company, one of the largest and most brilliant manufacturing establishments in the West, General M. D. Leggett."

After the applause following Mr. Bolton's remarks had subsided, General Leggett addressed the audience as follows:

GENERAL LEGGETT'S REMARKS.

General M. D. Leggett, on being introduced as President of the Bureau, spoke in substance as follows:

"Ladies and Gentlemen: I am happy to see this very large and appreciative audience here tonight. Nearly all of the gentlemen present belong to the busy class, whose heads and hands are so deeply engrossed in productive labors and enterprises as to have but little time to devote to the demands of amusement, enjoyment, and the love of art and science.

"Most of the lectures and concerts to which our citizens are treated occupy evenings when least convenient for busy men, and being produced in the interests of money making schemes, are often beyond the means of many who desire to have their wives and children accompany them. Our effort has been to secure an interesting and instructive series of concerts and lectures at the simple cost of their production, and to have them presented on Saturday evenings, when busy people can best afford the time to attend them. We are indebted to the energy and enterprise of our secretary for the success of the undertaking. The very large sale of season tickets, and the presence of this vast and intelligent audience, bearing such tickets, together with the attractive program for the season, make the success certain.

"Our treasurer, Mr, Doan, whose warm and earnest heart is so energetically engaged in every good work, desired and expected to be with us tonight, but was unexpectedly called to New York.

"Professor Alfred Arthur has prepared the feast to which we are invited tonight, and I have no doubt he will present a dish for every taste, however fastidious.

"I now turn the audience over to the direction of Professor Arthur."

EXCELLENCE OF THE ENTERTAINMENT.

The concert program, which appears in "A Brief History of Music," under the direction of Mr. Alfred Arthur, was then rendered, without the change of a number.

Every number on the program was worthy of more or less comment and praise. Most noted and most applauded of the numbers were the soprano solo, Tours's "Angel at the Window," by Mrs. Henry Perkins of Akron; the ballad dialog, De Pearsal's "Who Killed Cock Robin," by the chorus; and the violin solo, M. Hauser's Second Rhapsodie Americaine, op. 44, by Mr. J. H. Amme.

Applause greeted Mrs. Perkins when she advanced upon the stage, and the applause that followed her to her seat after the solo was almost deafening. Mrs. Perkins's clear, smooth, and distinct, though not loud, voice, filled the whole hall, even to the remotest corners, and this excellence of the quality of her voice had much to do with the great favor with which the distinguished lady was received. In response to an encore, Mrs. Perkins sang with great effect Blumenthal's solo, "The Wedding day." The Bureau very thoughtfully remembered the lady with an exquisite basket of natural flowers, roses and delicate buds, artistically fashioned into a wonderfully beautiful floral emblem.

The full chorus sang the ballad dialog with great effect, the twenty sopranos, as one voice, singing the interrogations, while the strong bass sang the response, and all joined in the chorus. The song was repeated in obedience to the wishes of the enthused audience.

The hight of the enthusiasm was reached at the eighth number in Mr. Amme's violin solo. Mr. Amme is well known in Cleveland, and was greeted with flattering applause when he appeared upon the stage. Seeming to catch the inspiration of the occasion, Mr. Amme played smoother, clearer, yet softer, sweeter, and more perfectly than ever before, and the audience unable to control itself, burst forth in the midst of the solo with a storm of applause. Quickly regaining themselves, all remained quiet to the last note, and then the applause was almost deafening. No number of any program rendered in Cleveland during the current season has received greater evidence of appreciation. Mr. Amme repeated part of the solo in response to the encore.

Mr. Rogers, Mr. Fitch, Miss Mansfield, the lady quartets, and Mr. Smith were encored, but by the time the eleventh number, Mr. Colson's piano solo, was reached, the hour was late and the crowd had become impatient for the end. Hence, though one of the best rendered numbers on the program, no encore was given, though the applause was generous. The chorus consisted of one hundred of the leading solo singers from the leading vocal societies of Cleveland. Each member was presented a beautiful button-hole bouquet by the Education Bureau.

There were not less than three thousand people in attendance.

JOHN B. GOUGH,

AND THE

UNIVERSITY JUBILEE SINGERS.

[From the Cleveland Leader.]

The last entertainment for the season of the Cleveland Educational Bureau was given Saturday. This popular course of lectures and concerts has from its first inauguration been recognized as a movement forward toward the elevation of the people to a higher intellectual plane by furnishing an entertainment so low in price that the most humble could afford it, and so elevated and excellent in character that the best educated could enjoy it. Many a poor working man and his family have looked upon these Saturday night entertainments as a bright oasis in the dreary routine of the week's work, and many of the wealthy, refined, and educated have enjoyed the entertainments, which have not been simply to amuse, but to instruct and elevate the mind.

To the gentlemen who originated and have carried to success this enterprise, too much credit cannot be given. It is thought that tickets are sold for the course of 1882–83 sufficient to fill the Tabernacle. Should the management find that it is safe to sell any more course tickets they will be placed at the book stores.

The largest number of people that have attended any of the entertainments found its way into the Tabernacle last evening, while hundreds were forced to remain outside after all the available seats and standing room in the building were occupied. Over four thousand people were present and maintained the excellent order and decorum that has been a marked feature of all the audiences at these entertainments.

The attraction presented by the Bureau last evening was a lecture by John B. Gough on "Peculiar People," and singing by the University Jubilee Singers of New Orleans, who made their first appearance in Cleveland last evening. Their singing of negro melodies and ballads was fine and the audience testified its appreciation by continued applause. Their rendering of "I'm Rolling Through an Unfriendly World," "Gospel Train," "Roll an' Rock a 'dem in His a' Arms," solos by Miss Jones and Miss Parker, and in fact their whole musical program was among the finest of the presentation of the higher class of negro melodies that has ever been presented here.

THE EVER NEW GOUGH.

At the close of the musical program General M. D. Leggett, the president of the evening, introduced Mr. John B. Gough, the lecturer, whose reputation reaches not alone from the Atlantic to the Pacific, but has crossed the Atlantic and extends throughout Great Britain. When Mr. Gough was introduced he was greeted with a storm of applause and after the clapping of hands ceased, the audience enthusiastically waved their little books. The thousands of pink covers and white leaves, fluttering everywhere, were beautiful and inspiriting.

Mr. Gough's reputation as a lecturer is already made, and it is unnecessary to say anything here to add to it. His lecture on "Peculiar People" was characteristic of the man. It was replete with anecdotes and illustrations woven over a groundwork of good sense and noble thoughts.

In conclusion Mr. Gough said: They say that I am all done up and going to retire. With God's help I hope to give two years more to Great Britain and two to this country.

This undertaking here is a grand one. I am going to write to England about it. Such an enterprise ought to be inaugurated in every city. I would be glad at such a place as this to give five nights twice a year free of expense.

At the conclusion of the lecture the applause continued for several minutes.

BOOKS AND FLOWERS.

The book issued and distributed last evening was on Astronomy, and contains much valuable information.

A large bouquet of beautiful calla lilies and roses was presented to the lecturer for Mrs. Gough, who was detained by illness at the Forest City House. The Jubilee Singers also were presented with button-hole bouquets.

RESOLUTIONS OF THANKS.

The Secretary, Mr. C. E. Bolton, offered the following resolution, which was adopted with much enthusiasm:

Resolved. That the sincere thanks of the Cleveland Educational Bureau are hereby tendered to the parties named below for very valuable and varied services, in most cases rendered gratuitously: The Cleveland Press, the Board of Education, the Police Department, Mayor R. R. Herrick, General M. D. Leggett, and other prominent gentlemen, for presiding at our entertainments; the Vocal Society and Central Musical Association, Arion, Mendelsshon and Mixed Quartets, the Cleveland Grays' and Philharmonic Orchestras; Messrs. S. Brainard's Sons, J. T. Wamelink, and C. H. Martin, for use of pianos; Mr. W. H. Doan, for a reduction of $540 in rental of the People's Tabernacle, and to the following young men, some of whom have gone without supper, that the public might be served in this place week after week: Mr. William Downie, Mr. L. W. Bingham, Mr. F. W. Strieby, Mr. S. C. Hale, T. K. Dissette, Esq., Mr. B. L. Pennington, Mr. William H. Grisman, Mr. Horace W. Whitney, Mr. Dewitt C. Harriman, Mr. R. W. Crawford, Mr. L. M. Scott, Mr. C. M. Spencer, Mr. P. Carlin, Mr. John Singleton, Mr. J. C. Engel, Mr. J. H. Snow, Mr. W. D. Folsom, Mr. O. J. Benham, Mr. C. H. Pettie, W. H. Dewitt, Esq., Mr. F. K. Oblainder, Mr. Halsey D. Miller, Mr. W. Gorham, Mr I. M. Chesbrough, Mr. J. C. Lester, Mr. H. C. Bender, Mr. W. R. Partridge, Mr. Gustave Strittmatter, Mr. W. G. Bowman, Mr. William Johnson, Mr. R. P. Johnson, Mr. A. Ehrlich, Mr. Charles E. Preble, Mr. C. A. Gager, Mr. Walter G. King, Mr. A. F. Miller, Mr. B. K. Emerson, Mr. L. McScott, Mr. H. F. Jordan, Mr. John Shaffer, Mr. M. D. Pastorfield and others; Boys—Master Mann, Master John Downie, Master Charlie K. Bolton.

THE EVERYDAY COLLEGE.

[From the Cleveland Leader.]

Dr. J. H. Vincent was greeted last evening by as large an audience as ever crowded into the Tabernacle. Long before the appointed hour the galleries and auditorium were filled, and the seats back of the speaker were brought into requisition for the use of the audience. Pending the appearance of the lecturer, the tabernacle orchestra gave several selections, which were received with great applause. At 8:15 o'clock General Leggett introduced Hon. R. R. Herrick as the presiding officer of the evening. Mayor Herrick, in responding, expressed himself as being sensible of the compliment conferred upon him. He then spoke of the value of education and the necessity of popular enlightenment, predicting that great benefit would ensue from the course of lectures. He concluded his remarks by introducing Dr. J. H. Vincent, originator of the "Chautauqua movement," whose carefully prepared, thoughtful discourse on "The Every-day College" was interrupted by frequent bursts of applause. Following is a brief synopsis:

LECTURE.

In a court of justice in an eastern province under the British rule, a trial for murder had just been concluded. The testimony was in, the lawyers had finished their speeches, and the judge was about to charge the jury. Suddenly a little farmer, a member of the jury, spoke up and asked the privilege of questioning the witnesses, one by one. The request was granted, and for six hours the plainly dressed little farmer questioned the witnesses. The result was that the prisoner at the bar was acquitted, and two of the witnesses were proven perjurers, and were subsequently tried and executed for the murder they sought to have the other punished for committing. There were several things the farmer lacked: a college education, a large library, and the ease and self possession gained by contact in city society. Let us appreciate his loss in not having a college training. In missing that he missed a great thing, and among the advantages he would have gained the benefit of a wise, systematized plan of education, a plan in which an end is sought and attained. He would have had the advantages of associating with the teachers and the students, and the mental stimulus created by an ambition to excel. The wide survey of knowledge, and the discipline given the mind, producing mental power and development of the brain; the self-discovery, finding for what profession the student is fitted; the rich memories, and the prestige of having completed a course of education, are attendants upon and follow from a college career.

But the farmer had not lost all. He had knowledge of men and affairs, the power of concentrating his mind, skill in the use of this knowledge and power; true, he had the pleasure of being called upon and treated as an equal and friend by the judge before whom the case was tried; he had the good practical results of his effort, the acquittal of an innocent man, and punishment of two rascals; he had the respect of his neighbors, and his own self-respect. How did he gain all these? He had natural ability; the habit of observation, especially of men; the habit of

close thought. All these he gained by the use of but one book, his entire library.

Let the farmer be our teacher to-night; let him correct a false and damaging idea which is altogether too prevalent; that is, that the possibility of education is limited to those who have had school and college opportunities.

The idea is damaging because it leads to self-discouragement and self-repression; an indifference to the education of our own children; or if the children be educated, this idea has a tendency to separate them from their unedncated father and mother. It tends to the formation of bad habits, of association with low people, of self-gratification in physical indulgence, of reading bad books. It has a tendency to destroy the love for home life, and to increase a self-contempt as years go by. Let us learn that the college hall is not the only place for culture; the college period not the only time for culture; the college student not the only candidate for culture, and the college facilities not the only facilities for culture. There is a college in every day life—in house, street, shop, farm, and market; lasting all the years; a college for all; a college that turns all the circumstances of life into opportunity. It teaches men and women everywhere to read, and think, and talk, and do, and to acquire power to read, and think, and talk, and do to a purpose, and that purpose is to BE. It trains indolent people to work with their hands, and those who work with their hands to work also with their brains. The every-day college is based on a true ideal of life: That man is man, and not a machine, not a sentient shovel for modern civilization, but a man with the power of thought. That the culture of the whole man is the worthiest work of life; foster the powers of thought, refine the affections, and make a man respect his manhood and worthy his place in the universe. The every-day college has no limitations of social positions, of wealth, of time, or age. Its secret is energy in personal purpose. Its facilities are abundant; the public schools are open where the children may go free of charge and lay the foundation of culture. The young should be required to go by authority of government. In a republic where every man is a king, the king should be cultured. When we cease to be governed by intelligent votes, the greatest danger is imminent. The press is a great factor in the every-day college. The platform, the shop, the field, the museums to be, and the public art galleries of the future, and the home, all take a part. No one can teach like father and mother, for there exists the love and confidence, and the right kind of a home elevates the standard of manliness and womanliness, inculcates habits of self-government, industry, and economy.

The every-day college has a flexible course of study, and special courses, according to tastes and business. It comes with a blessing to all its members, neutralizes sorrow, eases bodily pain, glorifies toil bestows upon everyone his rightful inheritance of knowledge.

The every-day college promotes a true brotherhood, especially needful in a land like ours; it will teach us to respect one another; make us worthy of respect; and removes political and religious prejudice. There is the greatest need for co-operation to produce these results, and the brotherhood should be mutually helpful.